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THE IDENTIFICATION OF COCAINE AND SOME COCAINE SUBSTITUTES.

By Francis J. Seiter and Frederic Enger.

During the last five years, a large number of specimens, containing cocaine, has been examined in this laboratory. This work was done for the Chicago police department, which has been striving to stamp out the illegal sale of cocaine to habitual users of the alkaloid.

The chief difficulty which presented itself in the analysis of the specimens was the small amount of material submitted by the police officers. The weight of an average specimen was approximately 0.1 gram. The specimens frequently contained acetanilide in amounts varying from 20 per cent. to 80 per cent. Some of the catarrh powders, *e.g.*, Dr. Gray's Catarrh Powder, contained but 8 grains of cocaine hydrochloride to the ounce. As in all these cases a portion of the specimen was reserved for exhibition in court, the quantity of alkaloid available for identification was so small as to render imperative the adoption of a scheme of analysis whereby the material might be economized without sacrifice of accuracy.

Many of the proposed tests for cocaine require considerable quantities of the alkaloid and yield results not characteristic of cocaine alone. Among these may be mentioned the tests with concentrated mineral acids, with or without the addition of oxidizers or other substances used in color reactions and the test involving the detection of the benzoyl group, which requires at least 0.2 gram,

according to Autenrieth.[1] This test is not reliable, however, as it is also given by alpha- and beta-eucaine, stovaine and, in fact, by any of the cocaine substitutes containing the benzoyl group.

The tests which fulfilled our requirements most satisfactorily, and which we adopted in our work, are based upon the following observations. Cocaine salts will react, under certain conditions, with gold chloride, platinum chloride, chromic acid and potassium

FIG. 1.

Cocaine chloro-platinate, x 100.

permanganate to form precipitates which, when examined under the microscope, are found to possess definite and characteristic crystalline forms.

The test solutions required are—1 per cent. solutions of gold chloride, platinum chloride and potassium permanganate and a 5 per cent. solution of chromic acid.

The alkaloid, isolated in the usual ways, is converted into the hydrochloride and made up to a 2 per cent. solution. A small por-

[1] Autenrieth, Auffindung der Gifte, 3 Aufl., page 79.

tion of this 2 per cent. solution, say ½ c.c., is set aside for the permanganate test. The remaining solution is diluted with an equal volume of water, forming a 1 per cent. solution. Portions of ½ c.c. of this solution are reserved for the platinum chloride and chromic acid tests. To a third ½ c.c. portion of the 1 per cent. solution is added 1 c.c. water and the resulting liquid used for the gold chloride test.

FIG. 2.

Cocaine-chloro-aurate, x 100.

POTASSIUM PERMANGANATE TEST.[2]

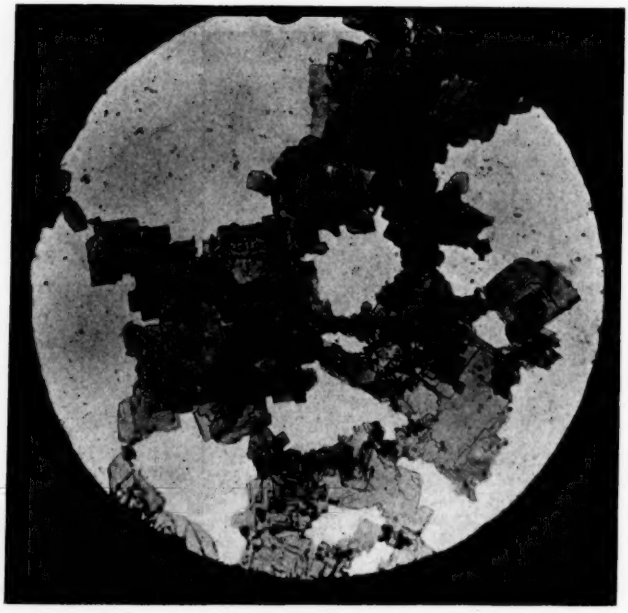
To ½ c.c. of a 2 per cent. solution of cocaine are added five drops of permanganate test solution. A precipitate is formed consisting of violet-red, rectangular plates. The other common alkaloids either immediately or slowly reduce the permanganate without forming crystalline precipitates.[3] This is also true of the cocaine substitutes, holocaine, acoine, and euphthalmine, which almost in-

[2] F. Giesel, *Pharm. Zeit.*, 1886, p. 132.
[3] Allen, Comm. Org. Anal. 2d Ed., vol. III, pt. ii, p. 144.

stantly reduce the permanganate. Alpha- and beta-eucaine and stovaine do not reduce the permanganate immediately, resembling cocaine in this respect. No crystals, however, are formed in these cases.

The permanganate reaction requires a fairly concentrated solution of cocaine, but there is no difficulty in obtaining the character-

FIG. 3.



Cocaine permanganate, x 100.

istic violet-red plates in a 2 per cent. solution. "With a one per cent. solution, the crystals (of cocaine permanganate) only form as evaporation takes place."[4]

PLATINUM CHLORIDE TEST.[5]

To ½ c.c. of a one per cent. solution of cocaine are added two drops of platinum chloride test solution. The test tube should not be shaken, as larger and better formed crystals will result

[4] Allen, Comm. Org. Anal. 2d Ed., vol. III, pt. ii, p. 276.
[5] A. B. Lyons, AM. JOUR. PHARMACY, lvii, No. 10.

when the solution is undisturbed. A buff colored precipitate is formed which, under the microscope, appears as large feathers or plumes, sometimes arranged in stellate pattern. In higher dilutions (1:600) crystals slowly form which "resemble carpet tacks."[6]

Alpha-eucaine, with the above test, gives bundles of fine needles; beta-eucaine, after 30 minutes, gives a few very large, broad leaves, rosettes and cubes; holocaine gives small stars; acoine gives an amorphous precipitate, while stovaine and euphthalmine give no precipitates. None of the precipitates yielded by the cocaine substitutes resemble the cocaine chloroplatinate in any way.

GOLD CHLORIDE TEST.[7]

To one c.c. of a dilute solution (1:300) of cocaine are added three drops of gold chloride test solution, avoiding shaking as in the case of the platinum chloride test. A precipitate immediately forms and slowly changes from the amorphous into the crystalline state. Under the microscope, the crystals resemble fern-fronds, generally with a stellate arrangement. In dilutions of 1:12,000, similar crystals form after long standing.

With the gold test, alpha-eucaine gives branching, twig-like crystals; stovaine gives large crystals resembling those of cocaine chloroplatinate in general structure, but differ in that the branches possess smaller branches, which is not the case with the cocaine chloroplatinate. Amorphous precipitates are given with beta-eucaine, acoine and holocaine. Euphthalmine gives no precipitate.

CHROMIC ACID TEST.[8]

To ½ c.c. of a one per cent. solution of cocaine are added two drops of chromic acid test solution and then concentrated hydrochloric acid, drop by drop with shaking, until the precipitate dissolves. After a short time, clusters of fine needles separate out and the solution remains yellow for several days.

Alpha-eucaine gives a precipitate which requires a large volume of hydrochloric acid for complete solution. The liquid remains yellow for several days but no crystals form. Beta-eucaine and stovaine behave like cocaine but no crystals separate out in either

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[6] Allen, *loc. cit.*, p. 275.
[7] A. B. Lyons, *loc. cit.*
[8] K. Metzger, *Pharm. Zeit.*, xxxiv, 697, also Allen, *loc. cit.*, p. 276.

Reagent.	Cocaine.	A-eucaine.	B-eucaine.	Stovaine.	Holocaine.	Acoine.	Euphthalmine.
$AuCl_3$	Fern-like crystals.	Twig-like crystals.	Amorphous ppt.	Branched crystals.	Amorphous ppt.	Amorphous ppt.	No ppt.
$PtCl_4$	Feathery crystals.	Fine needles.	Leaves, cubes and rosettes.	No ppt.	Small stars.	Amorphous ppt.	No ppt.
KM_nO_4	Violet-red squares. Slow reduction.	No crystals. Slow reduction.	No crystals. Slow reduction.	No crystals. Slow reduction.	No crystals. Immediate reduction.	No crystals. Immediate reduction.	No crystals. Immediate reduction.
H_2CrO_4	Fine needles. No reduction.	No crystals. No reduction.	No crystals. No reduction.	No crystals. No reduction.	No crystals. No reduction.	No crystals. Brown ppt. and solution.	No ppt.
Chlorine Water.....	No ppt.	Milky turbidity.	Dense turbidity.	Light turbidity.	Yellow turbidity.	Maroon ppt. and claret sol.	No ppt.

case. Holocaine gives a precipitate soluble in hydrochloric acid, but no crystals form and the solution turns green on standing. Acoine gives a precipitate soluble in hydrochloric acid. After a short time, a brown precipitate forms and the supernatant liquid becomes brown, slowly changing to green. Euphthalmine gives no precipitate with chromic acid test solution.

Cocaine solutions will yield crystals with chromic acid in dilutions of 1 : 1000.

The behavior of cocaine with the chromic acid test is not duplicated by any of the other common alkaloids.[9]

In addition to the above tests, the behavior of chlorine water with the cocaine substitutes has given valuable results which serve to differentiate between these and cocaine. To 1 c.c. of a one per cent. solution of alkaloid are added 2 c.c. of saturated chlorine water. Cocaine gives no precipitate; alpha-eucaine, a milky turbidity; beta-eucaine, a dense white turbidity; holocaine, a light yellow turbidity; stovaine, a light milky turbidity; acoine, a maroon precipitate and claret solution, and euphthalmine, no reaction.

The results of all the foregoing tests are appended in tabular form on the opposite page.

The micrographs, representing a magnification of 100 diameters, were kindly made for us by Mr. Carl S. Miner, Ellsworth Building, Chicago, for which we wish, in this place, to express our appreciation.

PHYSIOLOGICAL METHODS FOR THE STANDARDIZATION OF DIGITALIS.

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It seems to be generally admitted that there is no satisfactory method for the chemical assay of the drugs of the digitalis series. Reed [10] and Vanderkleed claim to have found an agreement between the values obtained for digitalis preparations through physiological tests and those obtained through determination of the digitoxin content, but their experience is practically unique, other investigators being able to see no such agreement. Inspection shows, moreover, that the results secured even by Reed and Vanderkleed are not at

[9] Metzger, *loc. cit.*

all convincing. In view of this fact, much work has been done in the attempt to secure a satisfactory method of physiological assay for the heart tonics.

Changes in the blood pressure and heart rate of a mammal following the intravenous administration of digitalis are, in all probability, proportional to the therapeutic value of the drug. It has been shown, however, that this method of testing is not suited for accurate standardization of the drugs belonging to the digitalis group. The same preparation injected into different animals will cause different percentage increase in blood-pressure and decrease in heart rate; while if a standard be injected with the purpose of comparing its action with that of the preparation to be tested, this standard will modify the results, secured by the subsequent injection of the drug of unknown strength, owing to the fact that the digitalis bodies are very slowly destroyed or eliminated by the animal organism.

The perfusion of the isolated mammalian heart also offers a satisfactory qualitative test for digitalis, but the technic is difficult and Sowton [18] has shown that the method is not suited for quantitative determinations.

The methods now commonly advocated may be divided into:

I. Those upon frogs.
   A. Houghton's 12-hour method.
   B. Focke's method.
   C. One-hour method.

II. Those upon mammals.
   A. Guinea-pig method.
   B. Hatcher's cat method.

To Houghton [12] belongs the credit of first employing physiological tests for the commercial standardization of the heart tonics. The method which he proposed in 1898 and which, with slight modifications, is still employed, rests upon the determination of the minimum lethal dose of the drug for a frog, usually *Rana pipiens*. A series of frogs is injected, into the anterior lymph sac, with varying doses of the preparation to be tested; and at the same time, another series of frogs from the same lot is injected with a standard. At the end of 12 hours, the animals are examined. If the variation of dosage has been sufficiently great, certain of the animals are alive, while certain others are dead. A second series is now injected with

the smallest dose which proved fatal in the first case, and if the majority of these are dead at the end of 12 hours, this dose is accepted as the m. l. d.

Focke's [7] experiments seem to have been carried out on *Rana temporaria*. The animals are fastened to a board and the heart is exposed with avoidance of hemorrhage. The drug, in the form of an infusion, is injected into the femoral lymph sacs, and the time noted before systolic stoppage of the heart.

A factor V is then determined from the weight of the frog, size of the dose, and lapse of time before systolic stoppage of the heart.

The one-hour frog heart method was originated by Cushny [4] and is now much used by his pupils, Edmunds and Hale. (The method proposed by Fraenkel [6] in 1902 differs from this in several important details.) It resembles Houghton's method in that the frogs are injected in series and comparison is made with another series injected with a standard preparation. At the expiration of exactly 60 minutes, however, the animals are pithed and the hearts exposed. When just the proper dose or an amount slightly in excess has been injected, the heart presents a characteristic picture; the auricles purple and distended; the ventricle white, motionless, and contracted.

In 1908, Reed [16] revived the guinea-pig method for determining the strength of preparations of the "heart tonics." Laborde and Duquesnel,[13] in 1884, were apparently the first to use the guinea-pig in such tests, their investigations dealing with two samples of "digitalin," the solutions of the drug being injected subcutaneously or intramuscularly. In 1888, Gley [9] compared the toxicity of oubain and strophanthin, using guinea-pigs and other animals. When Houghton,[12] in 1898, published his method for the assay of strophanthus, he stated that he had employed guinea-pigs, as well as frogs and other animals, upon which to perform experiments.

Reed believes that frogs are unsuitable animals to employ in these tests, because they vary in their resistance to the drug according to season, species, and weight; while the guinea-pig "does not appear to offer so wide a variation." In the same year, Crawford [2] pointed out the unreliability of frogs, their powers of resistance depending upon season, sex, and room temperature. He considers that: "Dr. Reed, of Philadelphia, has made an important advance by using guinea-pigs, animals which are more resistant to injury."

Githens [8] is firmly convinced of the superiority, as experimental animals, of guinea-pigs over frogs. The latter are markedly influenced "by external surroundings, temperature, amount of moisture present in the cage, relation of time of feeding to time of injection, etc. The species of frog also makes a difference, and, according to many authors, the time of year." The guinea-pig, on the contrary, "shows no such variation." The use of a standard preparation for comparison with the preparation to be tested is unsafe, because the standard is "dependent on the keeping properties of a stock galenical, and these are exceedingly uncertain in many drugs."

Finally, the committee on pharmacological assay, of the Philadelphia branch of the American Pharmaceutical Association,[17] advocates the adoption of the guinea-pig method as the official method of assay for digitalis. Frogs, they state, vary according to species, season of year, and locality. "Guinea-pigs, on the other hand, are obtainable in all parts of the world . . . their susceptibility to digitalis, *so far as is known,* does not vary under ordinary conditions. Temperature, food, season, weight, and sex do not influence their reaction." The members of the committee are convinced that the use of a standard preparation is unsafe, because this standard may vary in strength and cause error in testing the preparation of unknown strength.

Granting that the guinea-pig is a better experimental animal than the frog, do the methods present any differences? In speaking of the frog methods, Reed [16] says: "It is, after all, only a toxic effect, and the fact that the frog dies with its heart in systole is not any more characteristic than the mammalian heart in diastole. In either case, the animal dies, and the cause of its death is the *action of digitalis on the heart.*" Crawford [2] also considers both frog and guinea-pig methods to rest upon the determination of the m. l. d. Githens [8] discusses the matter rather fully. "The physiologic action of these drugs, on which their therapeutic value depends, is mainly a stimulation of the heart, shown by more forcible contraction of its walls. The drugs kill either by inducing a state of constant contraction (death in systole) or by overworking the heart muscle to such an extent that it gives way to a more or less sudden exhaustion with relaxation (death in diastole). In either case the effect is primarily due to stimulation of the heart, and thus varies in accord with the physiologic or therapeutic activity.

. . . occasionally in mammals the respiration ceases before the heart has come to a standstill. *This does not indicate any direct action of the drug on the respiratory centres, but is due to interference with the function of the medulla, dependent on the disturbance of its blood-supply. The death is thus due to the stimulating action on the heart, however it may eventually occur.*"

The Philadelphia committee [17] find that the only essential difference in the methods is that the question of absorption plays an important part if frogs are used. They state that Edmunds and Hale showed "the fatal dose for 12 hours is about three-fourths of that for one hour. It is evident that the difference between the dose required to kill in one hour and that required to kill in 12 hours is largely a question of rapidity of absorption. Now, it may easily be that a preparation which is highly active may be, for some reason, comparatively slowly absorbed, so that the one-hour test is not only of activity of the drug, but of absorbability, which is manifestly not the purpose of the assay."

Hatcher [11] believes that the cat is especially suited for the assay of these drugs. By the intravenous administration of the preparation to be tested, a method simpler, cheaper, more accurate, and less time-consuming than those usually employed is secured.

The simplicity of this method is not very apparent, necessitating, as it does, anæsthetizing the cat, dissecting out the vein, and insertion of a canula. It has not been our experience that cats are cheap or easily obtained. According to the tables Hatcher gives, with digitalinum verum there was an error of 20 per cent.; with digitalin, of over 55 per cent.; with impure adonin, of 9 per cent. Further, in a note he says: " . . . we have found a number of cats which tolerated doses up to nearly 50 per cent. more than that stated." The actual time of one assay is 90 minutes, but when it is realized that a certain amount of preliminary preparation is needed, it is evident that running two animals, the minimum number from which reliable results could be obtained, will consume over three hours.

That these experienced pharmacologists should, after mature consideration, come to such conclusions is a fact that makes me hesitate to take a contrary view. It does appear, however, that certain points in favor of the frog methods have not been fully brought out; nor have certain important draw-backs to the mammalian method been given the prominence that is proper. Moreover,

some of the statements of Reed and Githens, unsupported by experimental proof, are rather at variance with the commonly accepted views regarding the pharmacology of digitalis.

To summarize the statements of the authors I have mentioned above, we learn that:

I. Frogs vary markedly in resistance to digitalis poisoning.

II. That the adoption of a standard is unsafe because of the uncertainty regarding the strength of this standard.

III. That guinea-pigs react with much uniformity to digitalis.

IV. That absorption plays an important part in the frog methods.

V. That guinea-pig and frog methods are lethal dose methods; death in both cases resulting from the action of the drug on the heart.

As suggested by Houghton, crystalline strophanthin, also known as strophanthin gratus or ouabain, is an ideal substance for a standard. Possessing, as it does, the characteristic "digitalis" action on the frog's heart, it is a definite chemical compound, and the question of variability of strength or deterioration does not come into play. By means of this ouabain, each frog lot can be standardized, and the possibility of error arising from uncertain reaction of the frog eliminated.

It is indeed commendable with what care some of the authors I quoted have scrutinized the frog methods in the effort to discover defects from the unfitness of the animal. The same amount of scrutiny has not, apparently been bestowed upon the guinea-pig. Reed [16] contents himself with saying that this animal "does not appear to offer so wide a variation"; Githens [8] says that it "shows no such variation"; while the Philadelphia committee [17] modifies its claim as to constant resistance in guinea-pigs by adding: "So far as is known."

In this connection, it is of interest to mention some of the results secured by Arms [1] in animal inoculations.

Two pigs inoculated with emulsion of nervous tissue from rabid dog: one developed typical paralysis on 11th day; second showed no evidences of injury and was normal at autopsy 13 months later. Two pigs inoculated with emulsion from another rabid dog; one died same night; other showed no evidences of injury and examination of brain was negative six months later. The following day, a third pig was inoculated with emulsion from this same dog; no

evidences of injury and "careful examination of many sections of both hippocampus major and cerebellum gave a negative result" 13 months later. Several instances cited, showing uncertainty in reaction of guinea-pigs to glanders infection. "Aside from these cases, we have several times failed to get a reaction in the pigs when the potato cultures from the swabs showed typical colonies and these injected into pigs proved to be B. mallei."

Doubtless, numerous investigations have been carried out to show that guinea-pigs do not vary in their resistance to digitalis intoxication, but I have been unable to find the report of a single series of experiments performed with the object of showing that guinea-pigs are not fully as much influenced by adventitious circumstances as are frogs. On the other hand, Houghton[12] states that he found guinea-pigs unsatisfactory as compared to frogs and Gley[9] mentions variability of the animals depending upon weight, and, as most important cause, the "physiologic factor," the degree of organic resistance, due to individual peculiarities. In view of these statements and the rather suggestive results of Arms, it would seem advisable to make such a report before advocating the use of guinea-pigs to the exclusion of other animals.

The Philadelphia committee[17] state that Edmunds and Hale found that only three-fourths of the dose necessary to cause systolic stoppage of the frog's heart within an hour was needed to kill the animal in 12 hours. In the bulletin containing the report of Edmunds and Hale,[5] the results secured by each of the frog methods is summarized. Comparing these results in tabular form, we have:

	M.L.D. in 12 hours.		1 hour method.	
Preparation	cc	mgms.	cc	mgms.
B. W. & Co.	0.015	1.5	0.020	2.0
Mulford No. 2	0.020	2.0	0.016	1.6
S. & D.	0.027	2.7	0.027	2.7
P. D. & Co.	0.029	2.9	0.021	2.1

It is seen that only in one instance was the dose determined by the 12-hour method smaller than that determined by the one-hour method. I shall endeavor to point out later that these methods *are not similar* and we should not expect the same results. One advantage possessed by the one-hour method is that the lymph sac is opened preparatory to exposing the heart and any unabsorbed drug is discovered, enabling us to disregard that animal, an ad-

vantage certainly not possessed by the guinea method, for Nestor [14] has shown that with rabbits, digitalis injected subcutaneously often becomes encysted and is not absorbed. Focke [7] is convinced, from many control experiments, that the question of absorption does not influence the results secured by the use of his method, in which the end is reached in from 8½ to 10 minutes.

The statements that digitalis always kills mammals by its action on the heart is not generally admitted. Edmunds and Hale [5] say: "On both mice and guinea-pigs, however, the cause of death in probably every case is not due to an action upon the heart, but upon the medulla. In every animal we examined we found the heart beating after the respiration had stopped and it *continued to beat as long as artificial respiration was maintained.*" Cushny [3] also states: "This stimulation, like that of picrotoxin, seems almost entirely limited to the medulla oblongata in many cases. . . . These alterations are much greater than those caused by the interruption of the circulation, and are, therefore, independent of the action on the heart to which they have been erroneously ascribed. . . . To the same cause is to be attributed the rapid, deep respiratory movements and convulsions which are often observed in the later stage of poisoning and which are evidently not due to cerebral anæmia, as has been supposed, for the brain at this stage receives quite as much or more blood than it normally does."

In a very thorough investigation carried out upon rabbits, Nestor [14] concludes that death from digitalis poisoning is always due to the action of the drug upon the respiration. He shows that when the symptoms of intoxication are of the most distressing kind, the institution of artificial respiration causes them to disappear. He shows that if a rabbit is given a dose of digitalis of such size that, uninterfered with, it always causes death, this animal can be saved by the maintenance of artificial respiration for several hours. He shows that the amount of digitalis which always kills the intact animal, when added to the liquid circulating through the perfused rabbit's heart, never causes cessation of the cardiac contractions. Finally, he removed the hearts of rabbits dead from digitalis poisoning and saw them commence to beat normally when perfused with Ringer's solution. "D'une façon absolument constante les cœurs reprenient vie et battaient bien. Et ce n'est pas seulement le cœur du lapin qui peut se comporter de la sorte apre's l'intoxication digitalique, mais nous avons répété les experiences avec le cœur *du cobaye,* du rat, et du pigeon."

All lethal dose methods are objectionable, because they offer nothing characteristic. The fact that a given preparation is capable of killing an animal is certainly no proof of its therapeutic value. The active glucosides of digitalis may become decomposed into such bodies as digitalresin and toxiresin, which, resembling picrotoxin, have a depressant action on the heart, and a preparation containing a large amount of such decomposition products, while testing high by lethal dose methods, might not only be below standard, but capable of causing dangerous poisoning. On this account, Houghton's method is open to criticism. Still less satisfactory, however, is the guinea-pig method, for, in addition to being only a lethal dose method, the animal probably always dies from the action of the drug on the central nervous system. As Edmunds and Hale [5] put it, "One solution might be very weak in its action upon the heart and yet contain decomposition products of digitalis whose typical action is upon the medulla, and it would, therefore, appear unduly strong when judged by such a standard. For this reason, we think that methods which employ as a standard the minimum lethal dose upon the higher animals are not applicable to the physiological assay of digitalis series."

It is in this respect that the one-hour and Focke's methods are much superior. In both of these, the condition of the heart is taken as a criterion. That this action on the heart occurs before the death of the animal is shown by the not uncommon observation of frogs able to crawl around and very much alive but whose hearts present the characteristic "digitalis" picture when the thorax is opened; a picture produced by no drug with which I am acquainted except digitalis and its allies. I am convinced that such animals as these would recover from the intoxication produced by digitalis if they were not molested and the point should be emphasized that these "frog heart" (Focke's and the one-hour method) methods *are not lethal dose methods.* Focke's method is rather complicated and the fact that it necessitates opening the thorax of an unpithed frog should prevent its adoption.

That the two "frog heart" methods are accurate within 10 per cent. is admitted. The cost is a feature that must be considered in any commercial method of assay, and a dozen frogs can be purchased for the same amount as one guinea-pig; thereby enabling many more control experiments with frogs for the same monetary expenditure for material.

The final test of any method of drug assay must rest with the clinician. So far as I can learn, no such clinical trial has been made of the guinea-pig method; while Pratt [11] in this country and Focke [7] in Germany, have shown conclusively that the therapeutic value of digitalis leaves runs parallel with the potency as determined by the "frog heart" methods.

In conclusion, we may say:

1. That the variations in the reaction of frogs can be nullified by the use of ouabain as a standard.

2. That it has certainly not been proved that guinea-pigs possess any marked advantages as experimental animals for testing digitalis over frogs.

3. That lethal dose methods are unsafe, while the one-hour frog heart method is both a good qualitative and quantitative test for the heart tonics.

I wish to acknowledge my indebtedness to Dr. J. P. Simonds and Mr. C. R. Eckler for assistance in the collection of data.

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BIBLIOGRAPHY.

[1] Arms, B. L.: "Some Freak Results from Animal Inoculation." A., *Journal of Public Hygiene*, vol. xix, No. 3.

[2] Crawford, A. C.: "Notes on Physiological Testing," AM. JOURNAL OF PHARMACY, July, 1908.

[3] Cushny: "Pharmacology and Therapeutics, or the Action of Drugs." Fifth edition.

[4] Edmunds, C. W., and Roth, G. B.: "Physiologic Assay of Nitroglycerine Tablets, Digitalin Tablets, and Fluidextract of Ergot." *Jour. Am. Med. Assoc.*, Dec. 19, 1908.

[5] Edmunds, C. W., and Hale, W.: "The Physiological Standardization of Digitalis." Bl. 48, Hyg. Lab., U. S. Public Health and Marine Hospital Service.

[6] Fraenkel: "Ueber die physiologische Dosirung von Digitalispräparaten." *Therapie der Gegenwart*, vol. 4, 1902, p. 106.

[7] Focke, C.: "Die Physiologische Wertbestummung der Digitalisblätter." *Arch. der Pharmazie*, Bd. 241, 1903; "Der Jetizige Stand der Digitalisprufung; Ihr Wert für die Praxis und fur die Forschung." *Ibid*, Bd. 247, 1909; "Die Kurzzeitige Injektionsmethode der Physiologischen Digitalis und Strophanthusprunfung," *Ibid*, Bd. 248, 1910.

[8] Githens, T. S., and Vanderkleed, C. E.: "Physiologic Standardization of Cardiac Stimulants and Depressants, etc." AMERICAN JOURNAL OF PHARMACY, Oct., 1910.

[9] Gley: "Sur la Toxicite comparée de l'ouabaïn et de la strophanthine." *Comp. red. hebd. des Séances de l'Acad. des Sciences.* Vol. 107, July–Dec., 1888.

[10] Hale, W.: "Factors relating to the Standardization of Digitalis." *Merck's Report,* February, 1910.

[11] Hatcher, R. A., and Brody, J. G.: "The Biological Standardization of Drugs." Am. Jour. of Pharmacy, August, 1910.

[12] Houghton, E. M.: "The Pharmacologic Assay of the Heart Tonics." *Journal of Am. Med. Assoc.,* Oct. 22, 1898.

[13] Laborde and Duquesnel: "La Digitaline." *Compt. rend. hebd. des Séances et Mem. de la Soc. de Biol.,* vol. i, 8th Series, 1884, p. 93.

[14] Nestor, Yerneaux: "Sur le Mecanisme de l'Intoxication Digitalique." *Arch. int. de Pharmacod.,* vol. 18, 1908.

[15] Pratt, J. H.: "On the Importance of Determining the Potency of Digitalis Preparations." *Boston Med. and Surg. Journal,* vol. clxiii, No. 7.

[16] Reed, E. D., and Vanderkleed, C. E.: "The Standardization of Preparations of Digitalis by Physiological and Chemical Means." Am. Journal of Pharmacy, March, 1908.

[17] Report of Committee of Philadelphia Branch of the American Pharmaceutical Association on Pharmacological Assay. *Bulletin of the Am. Pharm. Assoc.,* Jan., 1911.

[18] Sowton, S. C. M.: "Some Experiences in the Testing Tincture of Digitalis." *British Medical Journal,* vol. i, 1908.

GRANATUM (POMEGRANATE).*

By John Uri Lloyd, Phar.M.

Punica granatum has been found in cultivation from the earliest historical times. It is now found in all warm countries of the world, and frequently as an ornamental plant in this country and abroad, where it requires protection during the winter season, as it will not endure the cold. It is recorded, *e.g.,* that in 1838 the pomegranate trees in the neighborhood of London were killed by the frost. The form generally grown as ornament is the double variety, and consequently barren. The fruit of the pomegranate

* Bulletin No. 18, Pharmacy Series, No. 4, will give a brief history of every vegetable drug of the Pharmacopœia of the United States, 1900 edition. This, like other Lloyd Library publications, is not in general circulation, being designed solely for exchanging for the publications of Societies and Academies of Science Extra copies will be printed for those who, before May 15, enclose one dollar to "The Lloyd Library," Cincinnati, Ohio.

has been esteemed a delicacy from the most ancient time, and we often see it offered for sale at our fruit stands. In the West Indies, where the plant would thrive naturally, it is not extensively cultivated, and the writer of this botanical history (C. G. Lloyd), who has visited all these islands, does not remember to have seen it or its fruit here. Like all cultivated plants, it is liable to variation, and several of its forms have been considered distinct species and named by several authors; however, they are all now considered forms of one species.

The pomegranate shrub, according to De Candolle, is originally a native of Persia and adjacent countries, but has been cultivated and naturalized in the Mediterranean countries, at such an early date that it has even been considered indigenous to these countries.

Pomegranate was included among the vegetables that were held sacred by the Assyrians and the Egyptians. The latter nation made it a custom to place in the graves of the dead fruits of the field and garden, among them pomegranates, specimens of which are preserved to the present day. The pomegranate had undoubtedly an occult significance with the ancient nations. It was frequently used as a mystical emblem in adorning the capitals of Assyrian and Egyptian columns, and the Bible (1st Book of Kings, vii, 18, 20) tells us that in the building of Solomon's Temple the capitals of the columns were decorated with a "network of pomegranates." Also (Exodus, xxviii, 33, 34), the hem of the high priest's robe was adorned with imitations of pomegranates in blue, purple and scarlet, alternating with bells of gold. The pomegranate was one of the three fruits brought to Moses by the men that he sent to spy out the land of promise. Many other passages scattered throughout the Bible refer to our plant, and testify to the esteem in which the tree and the fruit (then called rimmon) were held in ancient times. The fruit and seed of the pomegranates are often mentioned in the "Arabian Nights."

Pomegranates were represented on Carthaginian and Phenician medals and on the reverse of the coins of the Island of Rhodes. In Greek mythology the pomegranate is very conspicuous and symbolizes fecundity and abundance. The fruit was dedicated to Juno, a deity always represented in sculpture as holding a pomegranate.

The Greek authors, *e.g.,* Theophrastus, describe the pomegranate under the names of "roa" and "roa side"; also Dioscorides, who quite explicitly sets forth the medicinal properties of

the different parts of the plant. Among Roman authors who describe the pomegranate and its uses are Cato Censorius, Pliny, Celsus and others. Subsequent writers, for example, the Arabians, in the ninth century, also refer to the pomegranate, but seem to have mainly reiterated the substance of the writings of their Greek and Roman predecessors. The "Arabian Nights" speaks of the use of the seed cooked as follows: "Every day I cook, five dishes for dinner, and the like for supper; and yesterday they sought of me a sixth dish, *yellow rice,* and a seventh, a mess of *cooked pomegranate seed.*" (Adventures of Mercury Ali of Cairo, vol. vii, p. 185.) Of the writers of the Middle Ages, may be mentioned Tragus and J. Bauhinus, the latter giving a most detailed compilation of that which was known before his time on the subject of the pomegranate, including the myths with which it is connected. It was not until the present century, however, that the literature of the pomegranate was enriched by the study of its chemical aspects.

PETROX PREPARATIONS.

By George M. Beringer, Ph.M., and George M. Beringer, Jr., P.D.

Since the introduction of Oleic Acid and the Oleates to medical practice by Prof. John Marshall of London in 1872, much has been learned concerning the action and use and the proper forms for the application of such medications.

Following his effort, a number of valuable papers were contributed to the medical and pharmaceutical journals. In the main, these dealt with the chemistry and were directed toward improving the methods of preparing the oleates of the alkali and metallic bases used in medicine so as to obtain more permanent and definite chemical compounds of a character suitable for use in ointments or in some cases as dusting powders. Yet in these forms, the remarkable penetration and absorbability possessed by Oleic Acid that makes it so valuable as a carrier for many medications, was but very poorly exhibited or utilized.

True, the so-called oleates of the alkaloids were simultaneously developed. These solutions of alkaloids in oleic acid contain a large excess of the solvent that is not needed for chemical reasons nor is it desirable for therapeutic activity. Very little attempt has

been made to make this class satisfactory and pleasant and the disagreeable rancidity of the oleic acid in such excess has no doubt deterred physicians from prescribing them, and statistics, as well as our personal experience, show that despite official recognition of a number of these oleates, their use is exceedingly rare.

Subsequent investigations proved that it was not necessary to use oleic acid in full strength as a vehicle for medication. Also that absorbability of oleic acid is really increased when it is more or less saponified by ammonia. Further that such an ammoniacal soap was miscible with fixed oils, notably paraffin oil, to produce a basic preparation which possessed most valuable properties and as a medium promised most extensive application.

It forms with water an emulsion, and when in practice it is rubbed into the surface it penetrates the pores of the skin and emulsionizes with the moisture and secretion present in the tissues and thus becomes even more rapidly absorbed and distributed than is pure oleic acid.

This basic preparation, which we call petrox, is an excellent solvent for many of the substances applicable externally as remedial agents in inflammations, congestions, rheumatic or other pains, skin affections, etc. Its solvent and penetrating properties certainly make it a most valuable vehicle and medium for topical medications.

Certain of the medicated forms, such as the iodine, methyl salicylate, guaiacol and creosote petrox preparations have also been recommended for internal administration in gelatin capsules or in suspension in milk or wine or other diluent.

While the names of eminent specialists have been associated with the introduction and endorsement of many of the medicated forms of petrox, their extensive use is no doubt largely due to the commercial exploitations of certain pharmaceutical manufacturers. These manufacturers have commonly adopted proprietary titles for their products and it is to be regretted that some should attempt to becloud the real composition and formula by the introduction of such vagaries and misleading statements in their literature as "an oxygenated hydrocarbon," "partly oxydized hydrocarbon" and that the "solid form," recommended as an ointment base, is an "inspissated form of the liquid."

The British Pharmaceutical Codex and the Ergänzungsbuch zum Deutschen Arzneibuch each contain a series of formulas for this class of preparations. The latter uses as a title "Vasolimentum,"

and the Codex "Parogenum," and as English synonyms Parogen, Vasoliment and "Oxygenated Paraffin," thus perpetuating one of the vagaries of the proprietary medicine man's advertisement.

The present edition of the National Formulary contains only formulas for the two basic preparations, "Liquid Petrox" and "Solid Petrox," but it is proposed to introduce in the forthcoming revision a full line of such formulas. This contribution to the subject is the result of an extensive series of experiments that we have carried out in order to determine proper formulas therefor. Most of the details of such experimentation and the failures are omitted and only formulas tried and in our opinion satisfactory are here presented.

Neither the official nor the sub-titles should be unwieldy, but should be such as are euphonious and to become popular should lend themselves to the customary abbreviations of prescription writing. The present N. F. Latin titles, "Petrolatum Saponatum Liquidum" and "Petrolatum Saponatum Spissum," are too long and cannot be readily abbreviated; and these objections become more pronounced when added to a specific name, as in the compound preparations. Such could never be popularized and would detract from the use and usefulness of the formulas.

The present N. F. has adopted as popular English title "Petrox," which precedes the British Codex title in publication and is already to some extent established in practice and must be retained at least as a popular title. It moreover lends itself easily to combined names for the compounds and it can likewise be readily Latinized into forms which are fairly euphonious.

This class of preparations is distinctly different from all other official classes and is of sufficient importance to warrant the adoption of a distinguishing title. This leads to the suggestion that we adopt in the revision of the N. F. as the Latin title PETROXOLINUM and synonyms Petroxolin and Petrox. In order to demonstrate this point these terms and the compounds thereof are used throughout this paper.

Anyone who has worked with oleates, knows how disagreeable and persistent is the odor of oleic acid. It is surprising that in this entire list of formulas as given in the Br. Ph. Codex and Ergänzungsbuch and likewise as marketed by several manufacturers as proprietaries, there is no attempt to overcome this drawback to their use by the addition of a perfume. The addition of a small

amount of Oil of Lavender largely overcomes this objection and makes a decided improvement in the preparations and is an innovation that we should introduce.

The compound preparations of this class are always listed as containing a definite percentage of the active medicament and for this reason as well as for the practicability of the work and to avoid the soiling of measures, the formulas submitted are all constructed on a percentage basis and the *ingredients are all weighed.* This departure from our established rule of weighing solids and measuring liquids is for reasons quite apparent, preferable in this class.

The N. F. directs the use of Spirit of Ammonia and the Br. Ph. Codex Ammoniated Alcohol 5 per cent. in some formulas and 10 per cent. in others. Spirit of Ammonia is so rarely called for, that it is kept in stock by comparatively few druggists and even when in stock it is usually deteriorated and of uncertain strength. This led to experiments to determine if it could not in these formulas be replaced by ammonia water and alcohol. We found that this was feasible and have framed the formulas accordingly.

Another point that needs emphasis, is, that while the "Liquid Petrox" will answer as the base for some of the medications or compounds, it cannot be used alone as the base for the preparation of many of the important formulas. Such preparations as Iodine Petrox, 10 per cent., and Iodoform Petrox cannot be made by simple solution but the medicament must be incorporated by proper manipulation in the course of preparation. In others, the proportion of oleic acid or other ingredient must be somewhat modified to obtain perfect solution and a satisfactory product.

The methods of manipulation as directed in the formulas, are those that were found necessary and it is quite important that these be carefully followed as deviation or careless manipulation may spoil the product.

PETROXOLINUM LIQUIDUM.

Liquid Petroxolin.	Liquid Petrox.
Liquid Petrolatum	50 Gm.
Oleic Acid	28 Gm.
Oil of Lavender Flowers	2 Gm.
Stronger Ammonia Water	5 Gm.
Alcohol	15 Gm.

Mix the Liquid Petrolatum, Oleic Acid and Oil of Lavender Flowers, in a flask, then add the Alcohol and finally the Stronger Ammonia Water and agitate thoroughly until clear, warming the mixture slightly, on a water bath if necessary.

Slight warming may be required in cold weather, to promote the saponification.

A yellowish-brown liquid, soluble in ether, chloroform, benzine and acetone, produces an emulsion on agitation with twice its volume of water.

The proportion of the ingredients in this formula does not vary very greatly from that in the present N. F. formula. The product forms a permanent emulsion with water. The formula of the Br. Ph. Codex yields a preparation that will not even form a good temporary emulsion with water, but separates almost immediately.

PETROXOLINUM CHLOROFORMI CAMPHORATUM.

Camphorated Chloroform Petroxolin.

Camphor and Chloroform Petrox.

Chloroform	25 Gm.
Camphor	25 Gm.
Liquid Petroxolin	50 Gm.

Dissolve the Camphor in the Chloroform, then add the Liquid Petroxolin.

PETROXOLINUM CADINI.

Cade Petroxolin. Cade Petrox.

Oil of Cade	25 Gm.
Liquid Petroxolin	75 Gm.

Mix them.

PETROXOLINUM CRESOTI.

Creosote Petroxolin. Creosote Petrox.

Creosote	20 Gm.
Oleic Acid	5 Gm.
Liquid Petroxolin	75 Gm.

Mix them.

The Br. Ph. Codex directs the creosote formula to be only 5 per cent. creosote, yet calls for 20 per cent. of guaiacol in the formula with the latter medication, but as the manufacturers list

both as 20 per cent. formulas, it was deemed advisable to make our formulas correspond with the usage of American practice. If 5 per cent., however, be adopted, then the addition of Oleic Acid will not be required in this formula.

The Creosote, Guaiacol and Eucalyptol Petroxolins all darken considerably on keeping and if that is deemed to be an objection they can readily be prepared as wanted. The darkening is probably due to traces of iron in oleic acid and is not serious as it cannot affect the medicinal action.

PETROXOLINUM EUCALYPTOLIS.

Eucalyptol Petroxolin.	Eucalyptol Petrox.
Eucalyptol	20 Gm.
Liquid Petroxolin	80 Gm.

Mix them.

PETROXOLINUM GUAIACOLIS.

Guaiacol Petroxolin.	Guaiacol Petrox.
Guaiacol	20 Gm.
Oleic Acid	5 Gm.
Liquid Petroxolin	75 Gm.

Mix them.

PETROXOLINUM HYDRARGYRI.

Mercury Petroxolin.	Mercury Petrox.
Mercury	30 Gm.
Hydrous Wool-Fat	15 Gm.
Solid Petroxolin	55 Gm.

Triturate the Mercury with the Hydrous Wool-Fat until it is distributed and globules are no longer visible when examined with a lens magnifying ten diameters; then add the Solid Petroxolin and mix thoroughly.

The percentage of mercury has been reduced to 30 per cent., which in a base so readily absorbed is believed to be ample to produce salivation.

PETROXOLINUM ICHTHYOLIS.

Ichthyol Petroxolin.	Ichthyol Petrox.
Ichthyol	10 Gm.
Oleic Acid	5 Gm.
Liquid Petroxolin	85 Gm.

Mix them.

PETROXOLINUM IODI.

Iodine Petroxolin. Iodine Petrox 10 per cent.

Iodine	10 Gm.
Oleic Acid	40 Gm.
Alcohol	20 Gm.
Liquid Petrolatum	23 Gm.
Oil of Lavender Flowers	2 Gm.
Stronger Ammonia Water	5 Gm.

Reduce the Iodine to a coarse powder by triturating in a mortar and transfer it to a suitable flask, add the Alcohol and then the Oleic Acid and agitate the contents of the flask until the Iodine is dissolved; now add the Oil of Lavender Flowers and the Liquid Petrolatum and mix the liquids and finally add the Stronger Water of Ammonia, shaking the mixture until a clear solution results.

It was found impossible to prepare a 10 per cent. Iodine Petrox by simple solution in the liquid Petroxolin. By improper mixing there results another difficulty, namely, the separation out of the iodine as a salt, and this is a difficulty that has not been overcome by some of the manufacturers of the proprietaries. The writers have examined several bottles of one manufacture that is greatly prescribed in which appeared quite heavy crystalline sediments that proved to be ammonium iodide. A sample made by the proposed formula has now been kept for more than five months without sign of any separation of crystalline deposit.

PETROXOLINUM IODI DILUTUM.

Diluted Iodine Petroxolin. Iodine Petrox 5 per cent.

Iodine Petroxolin	50 Gm.
Liquid Petroxolin	50 Gm.

Mix them.

ALTERNATIVE FORMULA.

Iodine in coarse powder	5 Gm.
Liquid Petroxolin	95 Gm.

Dissolve the Iodine by agitation with the Liquid Petroxolin in a stoppered bottle.

An assay process should be provided for the Iodine Petroxolins. The Ergänzungsbuch zum Deutschen Arzneibuch gives a method of assay which should, however, be thoroughly tried by competent chemists before adoption in the N. F.

PETROXOLINUM IODOFORMI.

Iodoform Petroxolin.	Iodoform Petrox.
Iodoform	3 Gm.
Acetone	20 Gm.
Oleic Acid	10 Gm.
Eucalyptol	3 Gm.
Liquid Petroxolin	64 Gm.

Dissolve the Iodoform in the Acetone, add the Eucalyptol, Oleic Acid and the Liquid Petroxolin and mix the ingredients.

Despite the statements in the books 3 per cent. of iodoform cannot be dissolved in Liquid Petrox alone; even if heat be used, only a portion will dissolve and this largely crystallizes out on cooling. Consequently, one of the solvents for iodoform must be made use of and for this purpose we selected acetone. The disagreeable odor of iodoform is modified and largely overcome by the combination of eucalyptol and lavender.

PETROXOLINUM MENTHOLIS.

Menthol Petroxolin.	Menthol Petrox.
Menthol	5 Gm.
Liquid Petroxolin	95 Gm.

Dissolve the Menthol in the Liquid Petroxolin by agitation.

The Br. Ph. Codex makes this only 2 per cent.; we have followed the trade lists in making it 5 per cent.

PETROXOLINUM METHYLIS SALICYLATIS.

Methyl Salicylate Petroxolin.	Methyl Salicylate Petrox.
Methyl Salicylate	20 Gm.
Liquid Petroxolin	80 Gm.

PETROXOLINUM NAPHTHOLIS.

Naphthol Petroxolin.	Naphthol Petrox.
Betanaphthol	10 Gm.
Liquid Petroxolin	90 Gm.

Dissolve the Betanaphthol in the Liquid Petroxolin by agitation.

PETROXOLINUM PHENOLIS.

Phenol Petroxolin. Phenol Petrox.

Phenol	5 Gm.
Liquid Petroxolin	95 Gm.

Dissolve the Phenol in the Liquid Petroxolin by agitation in a stoppered bottle.

PETROXOLINUM PICIS.

Tar Petroxolin. Tar Petrox.

Oil of Tar	25 Gm.
Liquid Petroxolin	75 Gm.

Mix them.

Oil of tar makes a clear solution and for this use it is certainly to be preferred to tar. Hence we have thus modified the formula of the foreign formularies which direct tar.

PETROXOLINUM SALICYLATUM.

Salicylated Petroxolin. Salicylated Petrox.

Salicylic Acid	10 Gm.
Oleic Acid	5 Gm.
Liquid Petroxolin	85 Gm.

Dissolve the Salicylic Acid in the Oleic Acid and Liquid Petroxolin.

PETROXOLINUM PHENOLIS CAMPHORATUM.

Camphorated Phenol Petroxolin. Camphorated Phenol Petrox.
Campho-Phenic Petrox.

Phenol	12.5 Gm.
Camphor, in powder	37.5 Gm.
Liquid Petroxolin	50.0 Gm.

Mix the Camphor and Phenol and when the mixture has liquefied add the Liquid Petroxolin and mix thoroughly.

PETROXOLINUM SULPHURIS.

Sulphur Petroxolin. Sulphur Petrox.

Sublimed Sulphur	3 Gm.
Linseed Oil	37 Gm.
Oleic Acid	30 Gm.
Liquid Petroxolin, sufficient quantity to make	100 Gm.

Heat the Sublimed Sulphur and Linseed Oil in a flask, on a sand bath, until the sulphur is dissolved, then allow to cool and add the Oleic Acid and sufficient Liquid Petroxolin to make the product weigh 100 grammes, warming the mixture slightly if necessary to obtain a clear liquid.

A dark brown, thick, oleaginous liquid possessing a very foul odor. By itself it is not apt to be applied to humans in this life, but it can be diluted and serves for the preparation of the succeeding formula.

PETROXOLINUM SULPHURIS COMPOSITUM.

Compound Sulphur Petroxolin.	Compound Sulphur Petrox.
Sulphur Petroxolin	10 Gm.
Oil of Cade	10 Gm.
Thymol	.3 Gm.
Eucalyptol	3. Gm.
Oil of Turpentine	30 Gm.
Liquid Petroxolin, sufficient quantity to make	100 Gm.

Mix the Thymol and Eucalyptol, add the Oils and then the Sulphur Petroxolin and finally sufficient Liquid Petroxolin to make the product weigh 100 Grammes.

PETROXOLINUM TEREBINTHINÆ VENETÆ.

Venice Turpentine Petroxolin.	Venice Turpentine Petrox.
Venice Turpentine	20 Gm.
Liquid Petroxolin	80 Gm.

Mix them.

PETROXOLINUM SPISSUM.

Solid Petroxolin.	Solid Petrox.
Paraffin	37 Gm.
Liquid Petrolatum	20 Gm.
Oleic Acid	30 Gm.
Oil of Lavender Flowers	3 Gm.
Alcohol	5 Gm.
Stronger Ammonia Water	5 Gm.

Melt the Paraffin with the Liquid Petrolatum, on a water bath, add the Oleic Acid, and transfer the mixture at once to a warm mortar; immediately add the Oil of Lavender Flowers and the mixed Alcohol and Stronger Ammonia Water and stir continuously until cool.

This yields a smooth pale-yellow ointment and if the above directions are carefully followed the resulting product is smooth and creamy, very suitable as an ointment base. It is essential that the mortar be warmed so as to insure a gradual cooling and that the stirring be continuous, otherwise the mass will be uneven and granular.

PETROXOLINUM SPISSUM.

THICK OR SOLID PETROXOLIN OR PETROX.

By Otto Raubenheimer.

As this preparation possesses the property of taking up at least twice its weight of aqueous liquids, a point which should be strongly emphasized in the propaganda, I believe it should therefore be of a hard consistency, rather than creamy.

One of the ingredients in this preparation also and again demonstrates the necessity, that, in order to avoid confusion, not only the potent medicaments, but all articles of the same official title in the various pharmacopœias of the world should be identical as to quality, purity and strength.

I refer to Paraffin, which, according to U.S.P., VIII, has a M.P. 51–57° C. and as low as 46° in some commercial samples, but which, according to D.A.B., IV, has a M.P. 74–80°, and which was reduced to 68°–72° in the 5th edition just published.

The U.S.P. product is a petroleum paraffin while the German pharmacopœial product is a refined earth wax or ceresin, entirely different in physical and even chemical characteristics.

As the origin of Vasogen, etc., can be traced to the "Vaterland," therefore the German paraffin or ceresin should undoubtedly be used.

Having made numerous experiments with Solid Petrox, I herewith present three samples together with formulas:

	No. 1.	No. 2.	No. 3.
Ceresin	30	40	Ung. paraffin 60 { Ceresin 4 P. = 24 gm. Wool-fat 1 P. = 6 gm. Liq. petrol. 5 P. = 30 gm.
Liquid petrolat...	22	20	
Oleic acid	35	27	27
Oil lavend. flow ..	3	3	3
Alcohol	5	5	5
Strong am. wat...	5	5	5
	100	100	100 gm.

No. 1 is Beringer's Formula, substituting or better replacing paraffin with ceresin.

In No. 2 I increased ceresin to 40 (from 30) and decreased Oleic Acid to 27 (from 35) and Liquid Petrolatum to 20 (from 22).

Its harder consistency makes it better adapted for use during the hot weather.

In No. 3, I have employed what I consider an ideal hard ointment base, namely Ung. Paraffini or durum of the D. A. B. V. (ceresin 4, liquid petrolatum 5, and wool-fat 1 part).

No special precautions were taken with any of these samples, excepting melting on water-bath of ceresin, liquid petrolatum and oleic acid, the addition of the other ingredients and cooling *without* stirring.

In my opinion the description of Solid Petrox in N. F., IV, should state something like the following:

"A yellowish ointment, capable of absorbing at least two parts of water."

Brooklyn, N. Y., March 19, 1911.

THE GENERAL REQUIREMENTS OF THE GERMAN PHARMACOPŒIA (V)*

By G. A. Menge.

To make exhaustive and critical comment upon all of the general requirements of the new German Pharmacopœia would require more time, and tax your patience to a greater degree, than should be tolerated in a minor detail of your program. Therefore, except for some very general features to which it seems to me your attention should be directed at this time, I shall limit my specific discussion to those general requirements which apply to the determination of melting points, freezing points and boiling points.

You are doubtless familiar with the practice, as applied in the old edition of the German Pharmacopœia, of incorporating in the introductory part more or less specific directions covering general

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*Read at the March meeting of the Washington branch of the A. Ph. A.

methods and procedure required in determining physical constants, analytical data, etc., and also specific definitions of general terms used in the body of the book—such as coarse, medium and fine (pieces or powder), room temperature, unweighable residue, soluble and insoluble, etc.

This feature of the old edition has not only been continued but has been extended and improved in the new. The advantage —from several viewpoints—of such a special treatment of general methods, terms and other details, seems to me to be obviously very great, and in principle at least should be adopted in the pending revision of the United States Pharmacopœia.

In this connection it is to be noted that for the sterilization of any substances that may require such treatment, the requirement in both the old and the new editions of the German Pharmacopœia is a very general one, consisting merely in the statement that unless otherwise stated, sterilization is accomplished by the application of heat in accordance with the rules of bacteriological technic, giving due regard to the properties of the substance to be sterilized. Obviously real compliance with such a general requirement necessitates some training in the essential principles of bacteriology as applied to sterilization. It is intended, I believe, that the new United States Pharmacopœia shall include some requirement on sterilization. It is plain that either our requirement must be much more specific than the German—probably impractically so—or the training in pharmaceutical schools and colleges should include at least enough bacteriology to cover such a requirement.

The methods and procedure for the determination of the melting points, freezing points, and boiling points of pharmacopœial substances as prescribed in this new edition, seem to me to represent both progress and retrogression—though the former doubtless predominates. In the attempt to justify this general conclusion, permit me to briefly contrast the old and the new requirements and to offer comment upon certain details:

In both the old and the new editions the melting point requirements, as to methods and procedure described in the introductory chapter, are divided into two parts; the first part applying to all pharmacopœial products except the fats and fatty substances, and the second part to the fats and fatty substances.

In the old edition the requirements for compounds of the first class provide the following details: Dry the sample in a desiccator

over sulphuric acid for 24 hours. Introduce sufficient of the dry sample into a capillary tube of 1 mm. diameter to form a column 2–3 mm. high in the bottom of the tube. Attach the tube so charged to a suitable thermometer and immerse in a bath of sulphuric acid contained in a test tube of 30 mm. diameter. Heat gradually with frequent stirring. That temperature at which the opaque mass becomes a transparent liquid and flows together in transparent drops is regarded as the melting point.

In the corresponding requirements of the new edition, improvement is noted in the following details:

1. Beside the same period and method of drying, the sample is required to be "finely divided"; and as previously noted this degree of fineness is specifically defined in another paragraph.

2. The column of sample in the bottom of the capillary must be 2–3 mm. high when "tapped down."

3. The position of the sample with reference to the bulb of the thermometer is definitely defined.

4. A most important improvement, as I see it, is noted in the matter of heating the bath—against no provision on this detail in the old edition, the new edition provides that from a point 10° below the assumed melting point, the rise in temperature shall be at the rate of 2° per minute.

The period and manner of drying is the same "when not otherwise stated," and the definition of melting point is the same.

The most radical change (and one which in my opinion is a step backward) is found in the method applied. The new method requires apparatus which is a cross between the Roth apparatus and the Graebe apparatus without including the specific advantage of either. It consists of a test tube 15 mm. in diameter and 30 cm. long, containing sulphuric acid to a depth of 5 cm., and adjusted in the neck of a round bottomed bulb of 80–100 cc. capacity having a neck about 20 cm. long, and 3 cm. in diameter, and containing sufficient sulphuric acid to two-thirds fill the neck when the test tube is in place.

The most serious defect in the new method, as I see it, is the absence of stirring, a detail which I consider essential to a well controlled melting point determination, and which is not easily applied with such a double bath apparatus. In this detail, therefore, I feel that the new requirements constitute a definite retrogression as compared with the old.

It seems to me also that in the matter of definition of the melting point the book leaves a large opening for progress toward more rational and adequate pharmacopœial standardization. I am firmly of the opinion that the requirement of a definite *melting interval* or range rather than a *melting point,* would establish a more logical and effective standard.

The old requirements for the fats and fatty substances involve the use of a thin-walled capillary tube of not more than 1 mm. diameter, open at both ends. Enough of the melted fat is drawn into one end of the tube to form a column about 1 cm. high, and is then cooled at 10° for 24 hours to insure complete solidification. Attached to suitable thermometer the sample is immersed in water contained in a test tube of 30 mm. diameter. The bath is gradually warmed with frequent stirring. The temperature at which the fat becomes transparent and rises in the tube is the melting point.

The new requirements differ in the following details:

1. A U-shaped capillary of 0.5–1 mm. diameter, filled with molten fat to the same level in each arm replaces the straight tube.

2. The sample is cooled on ice for 2 hours, or at 10° for 24 hours.

3. The charged tube is attached to a suitable thermometer so that the sample will be on a level with the thermometer bulb.

4. A bath of equal parts of glycerin and water displaces the bath of sulphuric acid.

5. Temperature must be raised "very slowly" to avoid superheating.

6. That temperature at which the fat becomes perfectly clear and transparent is the melting point.

I am of the tentative opinion that the U-capillary is not an improvement over the straight capillary in determining the melting point of fats. This constant is generally more difficult of exact determination as applied to fats than for the other class of compounds. It is claimed by authorities on fats that some fats become clear and transparent before complete melting while others remain cloudy for some time after, and therefore perfect clearness and transparency is not a good criterion of the melting point. For the purpose of pharmacopœial standardization, however, the main thing, it seems to me, is to select some behavior, in the region of the much mooted "true melting point," which is easily observed and reasonably constant. With the old method, the rise of the

fat in the tube under the slight pressure of the water would seem to fulfill such a condition and to indicate at least the melting point of that portion of the fat which is in direct contact with the tube. More extended experience with fats might of course change my views on this point.

The absence of stirring as a requirement in these determinations, although perhaps not so serious an omission as for melting points at higher temperature, still seems to me a mistake.

The requirement in the new edition of a method for the determination of freezing points is all on the credit side—no such requirement being found in the old edition. The method is substantially as follows: Ten grams of the substance under investigation are carefully melted in a test tube containing a suitable thermometer. By dipping the tube in water, the temperature of which is about 5° C. below the freezing point of the substance, the melt is cooled to about 2° below the freezing point; then by stirring with the thermometer, or if necessary by seeding with a small crystal of the substance under investigation, freezing is induced and the highest temperature observed during the freezing process is the freezing point.

The method has the advantage of extreme simplicity, and is therefore readily available to all concerned. It is also probably adequate for the purpose intended, but without personal experience with the method I hesitate to offer critical comment, except perhaps that the dimensions of the test tube, and also of the thermometer, used should be specified. The latter criticism is of general application and will be referred to later.

Just as for the freezing point, the methods described for the determination of the boiling point constitute a feature of the new edition not found in the old, and therefore represent a distinct advance in standardization.

As in the case of the melting point, the boiling point requirements are divided into 2 parts:

The first part describes a method which is intended to serve only as a means of identification of the liquid, and not as a test of its purity. The procedure is somewhat similar to that described for the first melting point method. A thin-walled capillary tube of 3 mm. internal diameter and containing 1–2 drops of the liquid under investigation is attached to a suitable thermometer and immersed in a bath of sulphuric acid just as in the first melting-

point method. A second capillary tube open at the lower end and sealed about 2 mm. above the open end dips into the liquid in the main capillary to prevent bumping. The temperature at which an unbroken series of bubbles begins to rise from the bottom of the liquid is the boiling point.

Having had no experience with this or a similar method I offer no critical comment.

The second boiling point method described is intended to determine the purity of the liquid and of course involves distillation. It is required that at least 50 c.c. of the substance be distilled from a distilling flask of 75–80 c.c. capacity. The bulb of the thermometer must be placed 1 cm. below the delivery tube of the flask. Before beginning distillation a small piece of broken porcelain is placed in the liquid to prevent bumping. The flask is heated in an air bath. *Nearly* the entire liquid must distill over within the required temperature—any low boiling fraction and any residue should be only *very small.*

It seems to me that this method might be improved by being more specific in detail; for instance, the length and diameter of the neck of the flask and the position of the delivery tube with relation to the mouth of the flask should be defined. Also such indefinite phraseology as "*nearly*" and "*very small*" are surely out of place in the *standardization* of a physical constant. It would seem feasible, instead, to incorporate in the description of individual liquids a percentage yield of distillate that should be obtained within the required limits of temperature; or to have a general percentage-yield requirement, applied to all liquids "unless otherwise stated."

Finally: I consider that the general requirements covering melting points, freezing points and boiling points, are seriously deficient in the lack of more specific limitations regarding the thermometer to be used. The book uniformly prescribes the use of "einem geeigneten Thermometer"—a phrase, which I have translated "a suitable thermometer," although possibly it could with equal accuracy be interpreted to mean "an accurate thermometer." In either case, however, my criticism applies, with little variation. Much argument might be offered to justify my attitude on this point—a single illustration I believe will serve the purpose: Of two equally accurate thermometers, standardized in the same way and covering the same range, one might be six inches long and the other three feet long—obviously

direct observations of the same melting point with the two thermometers registering near their upper limits would be widely divergent. I am firmly convinced that if we are to approach real standardization of these physical constants, the pharmacopœial requirements must include either the use of a standardized thermometer with application of correction for emergent stem, or the use of a perfectly uniform standardized thermometer (*i.e.*, an official thermometer). In the latter case the emergent stem correction might be omitted without effect on *standardization,* but with sacrifice of the greatest *accuracy.*

NOTE.—Much more extended and detailed discussion of melting-point requirements, as applied to the United States Pharmacopœia, will be found in Hygienic Laboratory Bulletin 70, of the Public Health and Marine Hospital Service.

PHILADELPHIA COLLEGE OF PHARMACY.

ANNUAL MEETING.

The annual meeting of the College was held March 27th, 1911, at 4 P.M. in the Library. In the absence of President French on account of illness, the First Vice-President, Dr. Richard V. Mattison, presided. Thirty-one members were present. The minutes of the quarterly meeting held December 27th, 1910, were read and approved. The minutes of the Board of Trustees for the meetings held December 6th, 1910, January 3rd and 25th and February 7th, 1911, were read by the Registrar, J. S. Beetem, and approved.

The Annual Report of President French was read by the Secretary and ordered entered on the minutes. The following items of information are abstracted from the Report:

The property as a whole is in good condition. The furnaces and engines have been repaired putting the heat and light plant in first class condition. Improvements have been made in the Pharmaceutical Laboratory, adding materially to the convenience of the teaching force and to that of the Students, and greatly facilitating the increased work of the department. The ceiling between the fifth floor and attic of the Tenth Street building was torn out so as to convert the room into a Gymnasium, giving splendid ventilation and enabling the Board of Trustees to establish a high grade Modern Gymnasium. The alterations in the Pharmaceutical Laboratory and the establishment of a Gymnasium cost $2166.72.

The department of Physical Training has proven of benefit to the Student body. Many Physical defects existing, especially those of the eyes, ears and throat have been corrected, and the systematic exercises given to the classes has added much to the health and comfort of the Students.

The total number of Students enrolled was 515.

In the Chemical Laboratory ninety-one students are doing individual work, and seventeen, thesis work. There have been twenty-five special chemistry students during the year. Twenty third-year students are doing thesis work in the Pharmaceutical Laboratory. There are twelve students in Bacteriology, and also some carrying on special investigations.

The Department of Botany and Pharmacognosy has made material progress during the year, but unfortunately is much crowded and badly in need of more room to extend their work. One of the most valuable adjuncts is the greenhouse and botanic gardens on the roof of the Annex building. The students derive much benefit from the same. The growing plants are used for class instructions, and are utilized for special investigations. Inquiries from various parts of the country are not infrequent regarding the conditions for growing medicinal plants, and it is gratifying to those in charge to be able to supply this information.

The Pharmaceutical, Chemical and Analytical Laboratories are now over-crowded, the Annex building on Cherry street gave temporary relief, but the growing demands of the classes are now so great that it seems necessary that increased accommodations be secured in the near future. The College location was originally a residential section, but with the lapse of years it is now surrounded by manufacturing establishments which must necessarily imperil the historic Collections in the building. These collections if lost could never be replaced—they possess a world wide reputation, and it is the urgent duty of your organization to preserve them for future generations. With this thought in mind your President has for three years past been endeavoring to secure from the City of Philadelphia a site for a new building, and it is hoped that in the near future this may be secured.

The Treasurer will report a material increase of the balance in bank over last year.

It is now a matter of record that the *College Bulletin* and *Alumni Report* have been merged and the first volume of Number Four was issued February 1911 under the Style of "*Bulletin of the Philadelphia College of Pharmacy and Alumni Report.*"

Two members were elected during the year. Four of our members have died during the past year, namely: Dr. Louis G. Bauer, David W. Ross, David Jamison and Caleb R. Keeney.

The Ninetieth Anniversary of the College occurred on February 23, 1911, at which time hearty congratulations were received from a number of the scientific and educational institutions of the city, and your President wishes to extend to those institutions, their officers and faculty his appreciation of their kindly thought, and also to his fellow officers. Board of Trustees and Faculty for their hearty support and co-operation during the year.

REPORTS OF COMMITTEES.

Committee on Pharmaceutical Meetings.—The meetings have been held regularly, and the programs while not as full as heretofore, have been excellent. Various members presided at the meetings. At the April meeting a most interesting discussion took place on Anti-Narcotic legislation which was participated in by many of the members—it was one of the best attended meetings of the entire series. The May meeting was given over to a symposium by students on their theses. This precedent is a good one, as the papers presented show what the apprentices are capable of doing and that the future of our profession will be taken care of. At the succeeding meetings, among those presenting papers were Dr. E. R. Larned of the University of Buffalo, C. Mahlon Kline, Professor H. C. Wood, Jr., George M. Beringer, Jr., and George M. Beringer.

The November meeting was given over to the memorial exercises in connection with the presentation of a portrait of Dr. Susan Hayhurst, the first woman graduate of the College.

The Committee thinks it is safe to say that every retail pharmacist would have saved much valuable time if he were present to have seen the demonstrations in connection with the papers which were read, and it is to be regretted that more do not appreciate the economy of time that results by attending these meetings and that of other associations where papers are read and discussions held.

Publication Committee. THE AMERICAN JOURNAL OF PHARMACY has been issued regularly during the year. There is an increase in the amount received from subscribers and advertisers, and a decrease in the expenses from last year. The old book with the names and records of subscribers which has been used for fifty years, has been replaced by the modern index system. This book is of considerable historic interest and will be placed in the College Collection with the other historic material.

Colleges, Universities, Libraries, and manufacturing laboratories are being constantly added to our list of subscribers, showing that the subscription list is becoming more stable.

Editor's Report. The matter published in THE AMERICAN JOURNAL OF PHARMACY during the past year may be classified as follows: Fifty-four original and selected articles which may be subdivided as follows: two Chemical, twenty-five Pharmaceutical,

two pharmacognostical, six technical, three on biological standardization and sixteen on miscellaneous subjects, quarterly reviews in progress of Pharmacy; thirty-one book reviews; a symposium on maceration and percolation, eight notes from correspondents, also reports of the United States Pharmacopœial Convention, the annual meeting of the American Pharmaceutical Association, the National Wholesale Druggists Association, the American Conference of Pharmaceutical Faculties, the Tenth International Pharmacopœial Congress, Minutes of the College meetings, Minutes of the Board of Trustees and pharmaceutical meetings, abstracts of special lectures, memorial and obituary notes, abstracts and miscellaneous notes.

The most notable feature of the JOURNAL the past year has been the large number of papers dealing with methods and standards of the United States Pharmacopœia, many of these papers were contributed by the chemists of the U. S. Public Health and Marine Hospital Service. Without enumerating more of these papers it may be said that they are of an unusually high order of merit and will no doubt be widely consulted.

Curator's Report. The question of the *identity* of drugs has become a most important question, because the dealer guarantees the identity of the drugs sold, according to certain standards, or suffer legal penalties if the goods be improperly branded. For this reason it has become essential that specimens of drugs of doubtful identity, either wholly or in part, must be compared with specimens of undoubted genuineness. For this purpose standard specimens of drugs are most necessary, and it may be fairly claimed that the drug collections of the Philadelphia College of Pharmacy are probably the best of their kind in this country. These collections are of undoubted authenticity and are rare and valuable. They are being consulted more and more by the pharmaceutical public and to make them more valuable an endeavor should be made to cover the entire field of vegetable drugs, every genera and species and varieties of plants having medicinal value should be added to the collections. Such a collection would be of immense value for reference not only to retail, wholesale and manufacturing pharmacists, but also to government authorities in their legal prosecutions.

Librarian's Report. The Library Committee has gone to considerable expense for re-organization. Fifteen hundred books have

been stamped and marked with the Library ownership, classified, accessioned and shelf listed.

The collection of Pharmacopœias has been brought up to date. New editions of the German, Austrian, Hungarian, Belgian, Swiss, Swedish, Norwegian, Dutch, Russian, Spanish, Italian and Japanese have been added. Since the first of January five hundred and twenty-eight persons have consulted the Library.

The resignation of William Ogilby from active membership was presented, and accepted with regret.

Professor Kraemer presented an enlarged photograph of the late Doctor Susan Hayhurst (the first woman graduate of the College) which had been donated by Mr. F. Gutekunst. The thanks of the College were tendered the donor.

The Committee on By-Laws was re-appointed: George M. Beringer, Joseph W. England, C. A. Weidemann.

The report of the Committee on Nominations were received and ordered entered and filed.

The election of officers, committees and trustees followed, Messrs. William McIntyre and E. M. Boring being appointed tellers. A ballot being taken the tellers reported the result when the following were declared elected.

President, Howard B. French; First Vice-President, Dr. Richard V. Mattison; Second Vice-President, Joseph L. Lemberger; Corresponding Secretary, Dr. A. W. Miller; Recording Secretary, C. A. Weidemann; Treasurer, Richard M. Shoemaker; Curator, Joseph W. England; Editor, Henry Kraemer; Librarian, Katherine E. Nagle.

Trustees for three years: Joseph P. Remington, C. Carroll Meyer, and C. Stanley French.

Committee on Publication: Samuel P. Sadler, Henry Kraemer, Joseph W. England, Joseph P. Remington, M. I. Wilbert, Miss Florence Yaple and Charles H. LaWall.

Committee on Pharmaceutical Meetings: Henry Kraemer, Joseph P. Remington, C. B. Lowe, W. L. Cliffe and William McIntyre.

President French made the following appointments: Delegates to New Jersey Pharmaceutical Association; George M. Beringer, Henry Kraemer, C. B. Lowe, H. L. Stiles and H. P. Thorn.

Delegates to Pennsylvania Pharmaceutical Association: C. B. Lowe, Joseph P. Remington, F. P. Stroup, William McIntyre,

Jacob M. Baer, William E. Lee, Charles Leedom, E. F. Cook, Samuel C. Henry and Clemmons Parrish.

Committee on Hallberg Memorial: F. P. Stroup, H. K. Mulford, W. L. Cliffe.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

ABSTRACT FROM THE MINUTES OF THE BOARD OF TRUSTEES.

DEC. 6, 1910.—Fourteen members present. Committee on Library reported between six and seven hundred books had been classified, accessioned and shelf-listed. Five books were donated during the month. Committee on Instruction reported that Professor Kraemer had recommended Mr. Armin Kohl Lobeck for the position of Instructor in Botany, his duties to begin on June 1st, 1911. The recommendation of the Committee was approved and Mr. Lobeck elected to fill the position. Committee on Discipline reported that a first-year student had presented a false certificate for entrance. After a thorough investigation, the young man, together with his preceptor, were found guilty, and the student was dismissed and informed that he could never again be admitted as a student in the College. Alumni Committee reported that the subject of amalgamating the "*Bulletin*" with the "*Alumni Report*" had been under consideration by the Board of Directors of the Alumni Association, and as a result of their deliberations, they would recommend a merger of the two publications under certain conditions. After a full discussion by the members of the Board, the Report of the Committee was adopted. Committee on Athletics reported that the Gymnasium was completed with an expenditure for total equipment, alterations, etc., much less than had at first been anticipated. Miss Katharine E. Nagle, the Acting Librarian, was elected to active membership in the College. The Dean presented, on behalf of Mr. H. L. Tomkinson, an interesting document in the shape of a bill for professional services by Doctor Lloyd Zachary, covering a period from October, 1746, to November, 1753, and, on motion, a vote of thanks was tendered the donor.

JAN. 3, 1911.—Committee on Library reported that one thousand books had been accessioned and shelf-listed since October, 1910. Several foreign Pharmacopœias recently issued have been purchased and others ordered to bring our collection of Pharmacopœias up to date. Mr. England, for the Committee on Resolutions in

memory of Professor Hallberg, submitted and read same, which were unanimously adopted and an engrossed copy ordered to be sent to the family.

FEB. 7, 1911.—Sixteen members present. Committee on Library reported three hundred and eighty-seven books accessioned since last report. During the past month a number of books were donated. Eighty-one persons had consulted the Library during the month. Committee on Examinations reported that J. Harry Swain had successfully passed his examinations of "Proficiency in Chemistry," when, on motion, it was ordered that the Certificate be granted. Committee on Announcement reported the merger of the *Bulletin* and the *Alumni Report*. The new issue will be published bi-monthly and will contain no advertisements, but will have matters of interest to the graduates and students of the College. It will be sent to all the graduates of the College without charge. Upon invitation, the Board took a recess and visited the Gymnasium to witness a drill by one of the class sections. The president stated that on the 23d of February, 1911, ninety years have elapsed since the founding of the College, and it was his pleasure to extend to the Board of Trustees, the Faculty and the Instructors of the College, an invitation to take dinner in celebration of the anniversary, with him at the Union League, on the evening of February 23, 1911. The invitation was accepted and a vote of thanks extended to Mr. French. A letter was received from Mr. Walter E. Martz, Executor of the Will of the late George W. Hayes, reciting a clause in the Will of Mr. Hayes as follows: "I direct that my gold watch be given to the graduate in chemistry and pharmacy of the Philadelphia College of Pharmacy, who is truly worthy, and who graduates with the highest honors from the said institution, after my departure." Mr. Hayes received this watch as a prize from the College in 1880. It was moved that Mr. Martz be notified that the College would accept the gift and award the same in accordance with the Will. By resolution of the Board, it was directed that an inventory of the Fixtures, Contents, etc., of the College, be taken as would be useful in the event of loss by fire. After a general discussion, it was decided that the heads of Departments and their assistants be requested to begin at their earliest convenience to make such an inventory.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

PRESENTATION OF PORTRAIT OF THE PRESIDENT, HOWARD B. FRENCH, PH. G.

Seldom has the writer had the privilege to be present on such a felicitous occasion as Tuesday evening, April 4, 1911, at the Union League, when a most excellent life-size oil portrait of President French was presented to the College on behalf of the officers, faculty, members of the Board of Trustees, members of the College and Alumni Association. The occasion was one of the great events in the history of the College, and was commemorated by a dinner, which was participated in by not only many of those who had contributed to the fund, but by the Mayor of Philadelphia, the State Superintendent of Education and other officials.

The portrait of President French is of him in his academic gown with cap in hand and was painted by Mr. Hugh H. Breckenridge, a teacher in the Academy of Fine Arts of Philadelphia, and an artist of high standing, particularly by reason of his excellent work in portraiture. The portrait occupied a central position in the brilliantly lighted banquet hall, which was resplendent with floral and other decorations in which the College and national colors were conspicuous. President French, though suffering from a cold, was present, and remained during the greater part of the ceremonies. The menu contained a four-color reproduction of the portrait and will be treasured as an excellent souvenir of the occasion. The addresses were in the nature of personal tributes to President French for his zealous and efficient labors as a man of affairs, as a leading citizen in the civic life of Philadelphia, and Pennsylvania, and as president of one of the oldest educational institutions in America.

Prof. Joseph P. Remington acted as toast-master. In his opening remarks he alluded to the fact that those assembled had met to do honor to Mr. Howard B. French, President of the Philadelphia College of Pharmacy, who had not only done much for the College of Pharmacy, but for the City of Philadelphia.

The portrait was presented on behalf of the members and alumni by Mr. George M. Beringer, A.M., Ph.M., Chairman of the Committee on President French Portrait, and also Chairman of the Board of Trustees of the College.

PRESENTATION ADDRESS BY MR. BERINGER.

MR. TOASTMASTER, HONORED GUESTS, FRIENDS AND FELLOW ALUMNI:

This is a memorable occasion in the history of the Philadelphia College of Pharmacy. Although she has attained the mature age of 90 years, one will search her records in vain for a similar event, and with the modesty that has always characterized her career she to-day pleads "first offense."

Heretofore, the alumni and members of the College, possibly because of the conservatism inherited from the Quaker founders, have refrained from giving any similar public testimony to the worth and appreciation of the services of any of her many faithful officers, during their existence in the flesh, but have been contented to have them await encomiums and merited recognition in obituary notices and with the rewards of the hereafter. On this occasion we have made a notable and universally approved departure from the time honored traditions and customs of the institution.

Do not think that I am going to use this as a proper premise to deduce the conclusion that institutions, unlike men, do not become infirm and decrepit with advancing years, but are rejuvenated with the decades they have passed. However, I will advance as a correct syllogism, that the Philadelphia College of Pharmacy was founded on broad ethical principles to supply a public need for the specialized and practical instruction of those entrusted with the protection of the public in the art of preparing drugs and compounding medicines, and that her officers and faculty have with honor and fidelity always adhered faithfully to the precepts and high ideals of the founders. To these truths we can attribute the success that has made her the model school for pharmaceutical education.

Despite the trying experiences and the greatly added duties and responsibilities that have come with the great strides made in the sciences and in the modern methods of education, she has unfalteringly maintained her principles. With each precept sustained, with each difficulty mastered, with each advance carefully planned and faithfully executed, she has grown stronger and stronger and to-day her renown and her achievements for pharmacy are indelibly stamped upon history and every citizen of this commonwealth should be proud of her standing and jealous of her success

and future prosperity in wider fields of usefulness and research.

Surely she has fulfilled the prediction made by that eminent scholar, medical teacher, and author, Dr. Geo. B. Wood, "that the Philadelphia College of Pharmacy would render the City of Philadelphia the centre of pharmaceutical education."

The success that has attended the College is undoubtedly very largely due to the exemplary men who have been elected as officers. The presidency has always been filled by men of marked ability and sterling character and broad experience who have been prominent in public affairs and assumed a full share of the duties and responsibilities of useful citizenship. Eight gentlemen have been elected as the chief executive since the founding of the College in 1821.

But I must not forget the admonitions both spoken and implied by the chairman of the committee in charge of this public function. First. He wanted me to limit my speech to two minutes for fear of tiring the audience. I crave your indulgence just a while longer even if I do exceed his time limit. Second. I was to refrain from poetical effusion. No fear of driving you away in this manner, the muse is sleeping, if not dead. Third. I was not to attempt oratorical flights. He possibly did not realise what a dead weight I am in this respect as I have never been accused by any one of being an orator. But this was not the reason he assigned. He intimated that the orators would follow and that the pyrotechnical display would be the finale. Again I was not to delve into historical reminiscences, but I cannot refrain from straying from his straight and narrow injunction and reminiscencing just a little.

The first president was Charles Marshall, of whom it has been said "that few nobler men ever lived."

The second was William Lehman, a scholarly pharmacist and legislator who for fifteen consecutive years was elected to the Pennsylvania Legislature and whose name was associated with many of the internal improvements of the State.

The third was Daniel B. Smith, who served as president for twenty-five years. He was a happy combination of business man, philanthropist, literary and scientific scholar, teacher, editor, and author. A man remarkable for the versatility of his attainments and who was associated actively with most of the scientific and charitable organizations then existing in the city.

The fourth was Charles Ellis, who succeeded to the business of his preceptor, Charles Marshall, and whose name for several generations was well and favorably known in the wholesale drug business of the city.

The fifth was Dillwyn Parrish a calm and dignified friend noted for his excellent judgment and wise discretion.

The sixth was Charles Bullock another man of attainments who devoted a large portion of his life to the development of the Franklin Institute and of this College.

The seventh was that "Grand Old Man" William Jenks whose conviction and love for his Alma Mater caused him to immediately resign the honor and duties of the office so that a younger man of energy and aggression might be elected.

The eighth is our present President, Mr. Howard B. French, whom we are pleased to have with us on this occasion as our honored guest and likewise to have on dual exhibition in this life like reproduction, a magnificent example of the art of the artist.

Since 1872, Mr. Howard B. French has been officially connected with the College as a trustee and since 1900, as our President. Without detracting an iota from the veneration and esteem in which we hold the memory of his predecessors in this office we can truthfully say that he combines in his personality most of the good qualities of all of them.

In spite of his large commercial and financial interests, despite the demands of the public, he has always managed to give close attention to the needs of the Philadelphia College of Pharmacy. You who know Mr. French know that he is a most strenuous worker, whose determination, zeal and energy combined with his executive ability enables him to accomplish a vast amount of work. He is one of the progressive spirits who are planning, not for the present day and generation, but whose wise forethought will make the progress of future generations a possibility and conservative old Philadelphia a model modern city and the best of the large cities in the world.

His love for the College, his devotion to her interests, his unselfish and indefatigable labors in her behalf, his indomitable courage and energy, his magnetic enthusiasm, the influence of his practical leadership have all been potent factors in determining her progress and setting the pace for future advancements.

These are but some of the traits exhibited in his official activities

and coupled with a personality, characterized by high ideals and virtues, have endeared our President to the members and alumni of the College.

A short time ago, some of the members of the College conceived the idea that it was only proper and due that some public recognition should be made of the unselfish labors of our President for the betterment of the College; some testimony given of our regard, esteem and love. A meeting was held to consider the subject and it was decided to appoint a committee to present to the Alumni and members a plan to honor him and at the same time add to the valuable collection of portraits owned by the College, by presenting by popular subscription a portrait in oil of our president.

The response of the Alumni was spontaneous and the committee have been over-joyed at the demonstrations of loyalty and the enthusiastic support that has accompanied the movement. An artist of high reputation was selected and we have before us now his finished commission, the excellent and almost speaking likeness of our honored president.

I esteem it as a great honor to act as the representative of the more than 1200 contributors to this fund, and in their behalf present to the College this portrait. In their behalf, I ask that it be accepted as a slight tribute to the efforts and personal worth of the original, a token of the regard and esteem and love that the Alumni has for our president. Further, this occasion signifies and this gift symbolizes the loyalty of our Alumni who are jealous of the fame and honor of their Alma Mater. An aggressive Alumni who are fully alive to her interests and who are praying that a better location and more ample facilities may soon be at her command, and with enlarged opportunities still greater achievements are confidently promised.

We ask that this portrait be preserved and safeguarded and trust that it may be but another inspiration to the members for the perpetuation of that integrity, sincerity, fidelity and adherence to principles that have always characterized the management of the institution. May the sentiments promulgated with its inception and associated with this movement live for ever. May the portrait as it hangs on the College walls prove a silent, yet effective example worthy of emulation, that shall stimulate the coming generations of students to their highest attainments and maintain the Phila-

delphia College of Pharmacy in the lead of all pharmaceutical education.

The portrait was accepted on behalf of the College by Richard V. Mattison, M.D., First Vice-President of the College.

ADDRESS OF ACCEPTANCE OF PORTRAIT, BY DR. MATTISON.

HONORED PRESIDENT, MR. TOASTMASTER, FELLOW ALUMNI AND FRIENDS:

By virtue of my position as First Vice-President of our College, I am accorded the rare opportunity of accepting upon behalf of our members, this portrait of our friend and fellow-alumnus, MR. HOWARD B. FRENCH, a memento in perpetuity of the love which the associates of our self-denying president have for his ever charming personality.

To voice this affection and high esteem, in which more than twelve hundred of our alumni have joined, is, I take it, the real object of this assemblage gathered to-night about this festive board. But in voicing it what can I say that you do not already know about this man whose thoughtful, clear-sighted, far-reaching and most unusual labor upon behalf of the Philadelphia College of Pharmacy has been and is of such transcendent magnitude that we even now scarcely appreciate the enormous possibilities which have been opened up to us through the untiring devotion of our president to our college interests.

As we, therefore, as his fellow Alumni, unite to do him glorious honor this evening, let us accord him with most joyous acclaim the fulsome praise which his deeds command and, in heartsome tribute to the rugged, manly personality of Mr. Howard B. French, unite with the immortal bard in Hamlet and, but slightly paraphrasing, say, "Here *is* a man that, take him all in all, we shall not look upon his like again"—our President.

RESPONSE BY PRESIDENT FRENCH.

MR. TOASTMASTER AND GENTLEMEN:

My physician positively forbade me saying one word. You have been exceedingly kind. You have honored me beyond, far beyond, my desserts; and I thank you all for having me here with you to-night and for doing honor to the College.

THE ADDRESS OF HON. JOHN E. REYBURN, MAYOR OF PHILADELPHIA.

The address of Mayor Reyburn was in the nature of a tribute to President French's services "as a citizen whose public spirit and unselfish labors have been of the greatest value in his relations to this community."

He said: No man other than he could stand before a Philadelphia audience to-day and claim with less dissent or with more truth that he has performed his whole duty toward this city. He has given up not simply honors, but even days to studious thought and active participation for the advancement of the public welfare. His services were not perfunctory, but enlisted the generous impulses of his nature; and he gave actively the very best thought and the most strenuous effort for the good of Philadelphia. I stand here to-night to acknowledge before this assemblage the obligations I am under personally to Mr. French for his strong common sense and for that equipoise of character which made his counsel and co-operation so valuable. There was with him a sort of holding things level, as you know a square man always does; and you can tell instinctively when a man is square. He has that conservative characteristic which I might call a holding back; and yet there was a strength and a fervor in his holding back. It was a powerful influence in itself; and I always recognized him as a safe guide and a reliable counsellor."

His Honor, the Mayor, further said: "To be the head of a great school like that of the Philadelphia College of Pharmacy, which for ninety years has proven its worth in our community, is in itself an honor of which any man might be proud. It is really a great distinction. We know how Mr. French has carried on the work of this institution—not carried it on in the sense of supporting it with money or with great gifts and all that, but by his personal, every day interests in its management, in the welfare of its students and in all that springs from an institution of this kind and that makes it efficient and a benefit to the community in which it is located. As its head, its director and its guide, he has kept the College in the exalted position which it occupies to-day and has occupied in all the years of its useful existence. There can be no question that it is to have a more extended sphere of activity. Indeed, in the logic of events, it cannot fail to share

in the great development that is sure to come to our community and to the whole world in the next generation. Its mission will be ever onward and upward.

"Now this institution deserves to be and ultimately will be placed in a location commensurate with its merit and importance. The example it has furnished, the influence it has wielded, and the great things it has accomplished for the good of humanity, not only in the city and State but in the United States, and I might say, throughout the whole world, entitle it to proper recognition, with the men who have been connected with it, the College has stood out among these institutions of learning, of art and of science, which have made Philadelphia famous."

Continuing, the Mayor said: "As I have said, we want to see the Philadelphia College of Pharmacy where it should be—we might as well say it frankly—upon the Parkway. And if there is anything that I can do to aid in placing it there it will be done. The College should be in a commanding place, where it may be seen by everybody, that the world may know of the good it is doing and will do."

ADDRESS BY NATHAN C. SCHAEFFER, PH.D., LL.D., STATE SUPERINTENDENT OF PUBLIC INSTRUCTION.

Dr. Schaeffer, among other things, said:

"When I was a boy, studying history, I noticed that there were certain names on the pages of that history that had the surname 'great' attached to them; and I asked myself 'What is it that makes the man great?' I noticed that there were only two classes of men in history to whom that surname 'great' was given; the one class being composed of men who had been eminent in the State; men like Charles the Great, Frederick the Great, and Alexander the Great. There was another class of men surnamed 'great' who had been eminent in the church, men like Leo the Great and Gregory the Great. And my perplexity grew when I asked, 'Why is it that men in past ages have only achieved greatness in two lines of human activity, the Church and the State." Well, in my boyish eyes the greatest man in the community was the one who could draw the biggest check and have it honored at the bank; but I very soon discovered that wealth does not make men great on the pages of history. You never read of Rothschilds who were great. Away back in the days when Virgil

wrote and Cicero spoke there were men so rich that they dissolved pearls in goblets of wine to make the drink more costly. But if your life depended upon it, I venture to say, not one of you could mention a single one of those rich men's names. In spite of their wealth their memories have been buried in oblivion. Wealth does not make men great. A man may be a manufacturer and pile up profits so that they will fill the vaults of a bank, but that does not make a man great. I got the notion that it was scholarship that made men great, for I found that on Commencement Day prizes and honors were awarded on the basis of scholarships. But when I began to study the life of Frederick the Great I found in it nothing of scholarship to boast of. He never learned to read his native German with any sort of fluency. Voltaire used to say, in the morning, 'Now I must go and wash the King's dirty linen,' meaning thereby that he must go and correct the King's French. Frederick never could read French accurately, and yet he was great. Scholarship never makes a man great. A man may be the President of a College, and noted for his scholarship, and yet never achieve greatness.

Is it political position? Well, many men have held political positions and they have sunk into oblivion. It is not political position either that helps to give a man his place amongst his fellowmen. Schleiermacher, in his essay on Frederick the Great, says 'that men are great in the degree and to the extent that they exert a moulding influence over their fellow men and render to them helpful service.' In past ages the Church and the State were the only channels through which the sons of genius could reach the masses of their fellow men and thus leave their own age and their own people better than they found them. But the nineteenth century opened up a new channel through which a man can reach his fellow men, and that channel is the school.

The man whom we admire and whom we have gathered to-night to honor has impressed himself upon the community through the school to whose board of trustees he has belonged for many years and at the head of which he has stood during a number of years. This Philadelphia College of Pharmacy has made itself felt not only in Pennsylvania, but even in the far-off countries of Asia and of other lands; and probably it has done more for humanity than some of us are able to perceive.

In the days of John Calvin of Geneva the average length of

life was twenty-one years. To-day, in some of the States of this Union, the average length of life is more than forty years. Is not that partly due to the fact that the druggist has learned how to compound prescriptions for people who are sick, how to administer medicine so that his drugs may not be harmful but their use may redound to the health and the welfare of the people?

No one can deny that our colleges of pharmacy have done very much to add to human longevity. For that reason a college like the Philadelphia College of Pharmacy, which, if my educational history is all right, was not only a pioneer, but the first institution of its kind on the face of the earth, deserves an amount of recognition, in the history of education, that cannot be accorded to an ordinary school. Is it not a pioneer, is it not a forerunner, is it not the parent of a great many schools that are now efficient agencies in curing disease and in lengthening human life?

Max Mueller says that every public man leads three lives while but one life is seen by the people at large. That is the man's public life. Another life is seen only by the man's intimates, by his wife and by those who live with him under the same roof. That is the man's private life. I have always felt that a man deserves great praise when his private life is in strict accord with his public life. And it is for that reason that we are constrained to praise the President of the Philadelphia College of Pharmacy. What is the third life that every man in public life leads? The third life is the inner life, visible only to the man himself and to his Maker on high. When a man's inner life corresponds with his private life and his public life, then we have a model man; the private life and the public life of the man being but an expression of that inner life which is visible only to the man himself and to his Maker. From all that I have been able to learn of the gentleman whose picture is before us, these three types of life have been in harmony throughout his long career.

Now, one word more and I am done. I have had my dreams; and when I visited the College of Pharmacy and saw how every inch of space had been utilized I could not help wishing for that contemplated boulevard with plenty of ground and the requisite facilities to accommodate this institution. Philadelphia is the centre of medical, dental and pharmaceutical education. When I was in the Berlin University, if a man was a Philadelphia dentist he had plenty of practice. Our University here draws a hundred more

students from foreign countries than Yale or Harvard or any university on the Atlantic Coast. This College of Pharmacy draws students from Asia and other foreign lands. It is renowned, both at home and abroad, for the thorough education which it gives. And my wish to-night is that the College of Pharmacy may grow and flourish and that its present President may live long to carry out the plans for its prosperity that he is cherishing. It is also my wish that the official life of our Mayor may be prolonged so that that "Beautiful Philadelphia" shall come when these gray heads can see it and that when that "Philadelphia Beautiful" shall be realized one of the ornaments to which the visitor may point with pride will be the new building, on the Boulevard, of the Philadelphia College of Pharmacy.

ADDRESS BY EDWARD JAMES CATTELL, ESQ., OF THE BUREAU OF STATISTICS OF PHILADELPHIA.

Mr. Cattell, who was introduced by the Toastmaster "as the silver-tongued orator of Philadelphia" made an address which alternated with flashes of humor and eloquence. He said in part:

It seems to me, gentlemen of Philadelphia, that the occasion of the presentation of this portrait, the fact that we are here honoring this gentleman who stands for a type of man good to the core because he wants to be good, not because he has no opportunity to do evil, testifies the highest type of public spirit and is full of promise for the city we all love.

Now, to speak the whole truth—I love Mr. French. I have known him these many, many years. And as I looked upon him to-night, there came back to me an old memory of fifty years ago when, early in the morning of a day in Spring, I first caught sight of his beautiful home in New Jersey. It was a building of snowy whiteness, with strong and beautiful lines rising with a dignity all its own, out of a grove of trees. Something about it was typical of that purity of life which the American home stands for everywhere. As I looked at Mr. French to-night, under his crown of silver,—God-given token of duty well done,—it seemed to me that: in his character, in his life record, in all that he has done for this city that I love, I could see the same strong, clean lines, the same untarnished purity, that stood out so gloriously in the morning sunlight when I first beheld the dear old home in which he learned from mother and father those noble principles

and generous impulses which have always distinguished him. I have at home a bank check drawn by his father—one of the finest men I ever met—to my father, sixty-five years ago. Our parents respected and trusted each other. I respect and love your President and am proud to tender this tribute to his worth and give this public recognition of what he has done for this city.

REMARKS BY HON. ISAAC JOHNSON, STATE BOARD OF CHARITIES OF PENNSYLVANIA.

MR. TOASTMASTER AND FRIENDS OF HOWARD B. FRENCH:

Surely no request from Mr. French to myself to say a word on an occasion like this could be denied, even though I only expressed my honor of being called upon. I thank you for the compliment you have paid this man here to-night. I have known Mr. French a number of years in connection with the State Board of Public Charities. What you have said about him to-night as he is known in the ordinary walks and avenues of life meets a warm response in the heart of every man who has met him in this great work. We do not meet often enough to speak to each other, during our lives, of the work in which we are engaged; as a rule we wait until our co-workers are dead, and then we build monuments to their memory when these cannot do them any good.

It was a great pleasure for me to come to-night to this dinner, to be present at the presentation of this portrait to the School of Pharmacy and to hear the kind words spoken of this man and to him when he can hear them and appreciate them. It is a very great pleasure to be told by those who have known him longest and best that, as he has travelled upon this stream of life until now getting into the way of being called an old man, he has never thrown any mud, was never indiscreet and that he has lived in a city that is cleaner and better for his living in it. What compliment can be paid a man equal to this? The distinguished educator who spoke here to-night pictured to us the wealthy and the educated; and he has told us that it is not wealth or education that makes men great. No; it is a man who picks a fellow up from the roadside and helps him over the rough places of life; it is a man who goes through life, strewing it with blessings—he is the great man. And only he will history perpetuate the memory of.

ADJOURNMENT.

The ceremonies closed at 11.20 P.M. with a round of cheers for President French, in which the entire company, under the lead of the Toastmaster, joined with great enthusiasm.

NAMES OF SUBSCRIBERS TO PRESIDENT FRENCH PORTRAIT FUND.

The collection of the subscriptions was placed in the hands of a special sub-committee, of which Mr. C. Mahlon Kline was the chairman. The replies received, with the subscriptions, showed not only the high esteem which the alumni have for President French and their appreciation of his devotion to the college, but uniformly expressed the affection of the alumni for the college and their desire to assist in every way in advancing her interests and in aiding her in retaining the leadership she now holds.

One of the most pleasing letters received as showing the loyalty of the alumni was that from the widow of a deceased alumnus, who in sending her contribution in memory of her husband added, "it would please him to know that I could help his Alma Mater in so small a way." As the chairman of the Finance Committee has said, "the generous responses of so many of the alumni show that they have the welfare of the college at heart, and these sentiments are really more important to the institution than the donations themselves." It was soon apparent after the Committee got to work that this movement to honor President French had become a movement for welding the alumni together into a coherent and efficient organization and was indeed stimulating not only to the members of the Committee but to all those engaged in the college work.

The following is a list of names of the members of the College and alumni who subscribed to the President French Portrait Fund, the total number being something over one thousand:

Gus G. Anderson, S. D. Addis, F. J. Althouse, Joseph C. Andrews, F. C .Albright, W. E. Allen, H. P. Arnold, John Ayres, H. V. Arny, Robt. B. Anawalt, Robt. W. Allen, Louis K. Acker, Frank I. Adams, E. F. Allen, J. K. Auginbaugh, William Appmann, M. D. Allen, Franklin M. Apple, William H. Andrews, Milton S. Apple, Howard Albert, James D. Adams, James A. Allen, Charles Franklin Adams, William C. Aughenbaugh, Paul Anspach.

Russel T. Blackwood, George B. Beakey, John D. Burg, Maxwell

M. Becker, George Blinkhorn, Grace Lu Babb-Abbott, Charles H. Baldwin, Warren B. Beckler, J. S. Beetem, J. O. Burge, Howard H. Boltz, S. A. E. Brallier, Thomas L. Buckman Charles A. Bye, Isaac A. Braddock, James Stanley Breen, Peter Bienkouski, Helen R. Burns, R. H. Brennecke, S. J. Bannan, John J. Bridgeman C. W. Baas, Russell G. Bush, George H. Borrowes, John H. Booth, Jacob M. Baer, Henry C. Blair, George M. Beringer, Howard J. Baer, Irwin A. Becker, Chas. M. Butcher, Mitchell Bernstein, Chas. J. Biddle, Fred W. Branin, W. C. Bauer, Geo. M. Beringer, Jr., W. E. Brown, H. A. Burkhart, D. A. Buehler, Jesse N. Blalock, C. H. Bernhard, Chas. H. Butters, Henry Blithe, Lulu Brookes, Virginia Brookes, Oliver G. Billings, B. Henry Balle, Albert E. Brown, Willis E. Bowen, Alexander Bachmann, W. C. Burchfield, Chas. B. Baumgartner, H. O. Baer, Samuel Bartholomew, S. J. Banman, Wm. H. S. Bateman, Jennie Block, Wesley J. Barrett, Edwin M. Boring, Ray P. Brown, Edw. H. Buehler, Fred J. Benner, E. H. Burhl, C. L. Bonta, Chas. W. Baas, Edgar Breneiser, E. P. Barr, M. W. Britcher, Geo. Bille, Elam Brubaker, E. F. C. Beecham, J. W. Beckwith, James Buckman, Robert W. Beck, John P. Bates, Max Barkel, T. H. Boysen, F. A. Butter, W. A. Bright, F. A. Bunting, W. L. Bucher, J. C. Boyer.

E. O. Criswell, Albert Cliffe, L. Corson, J. C. Coscey, Wm. F. Cramer, Jr., P. V. Cooper, C. C. Church, Nathan A. Cozens, Edward B. Clark, Wm. E. Cassell, F. F. Coleman, Katherine Cliffe, Norman H. Cloud, R. B. Claudy, M. Costello, W. G. Culby, C. F. Carter, A. D. Constock, Virgil Coblentz, Theo. Campbell, E. F. Cook, David Costelo, Albert R. Calhoun, Milton Campbell, F. W. Culler, F. H. Cappeau, Geo. J. Coleman, Roy T. Cope, J. W. Cotterel, A. T. Clayton, Clarence H. Campbell, W. A. Clingan, S. Ross Campbell, Geo. H. Colton, Thos. C. Coltman, W. A. Carpenter, J. W. Crumbie, C. R. Carrington, T. F. Crawford, H. V. Crawford, W. R. Calvine, A. D. Cuskaden, H. C. Clapham, H. G. Carter, W. L. Cliffe, H. M. Carey, Geo. L. Carman, John E. Carter, Clarence Croft, Jos. Carey, G. J. Crumbis, L. B. Curtis, A. B. Clark, G. F. Crouse, Chas. S. Closson, Lane V. Collins, H. L. Cox, F. W. Cotton, L. B. Coley, John H. Collins, Amanda M. Carslake, Clarence H. Corp, J. K. Challenger, E. D. Chipman, Louis G. Clarke, E. D. Crouse.

H. B. Dilatush, H. J. Darr, Robert L. Dubbs, Walter C. Dugan, L. H. Dielman, R. G. Dunwody, P. R. Donmoyer, W. A. Dorman, H. M. Dorman, W. H. DeBeust, S. B. Davis, L. A. Dresbach, J. H.

Dewees, Kate M. Davidowitch, Henry H. Dancy, Oscar C. Draper, A. Dougherty, J. H. Dewees, Norman R. Dean, Geo. J. Durbin, H. D. Dietrich, C. G. Dodson, Chas. F. Dare, Wm. T. Douglass, H. L. DeKalb, Louis Dielman, John H. Dawson, W. E. Dittmeyer, Guy S. Dunbar, C. A. Duncan, William Dulin, Geo. B. Davis, Harmon Dilks, Jr., Chas. B. Dierolf, W. R. Dawes, Alex. Dubell, C. Wilfred Dare, Howard S. Davis, T. I. Deibert, Servill Douglass, Wm. B. Davis, Edwin A. Donecker, Thos. Donaldson, H. H. Dealeyne, W. R. Decker, Philip C. Dosch, A. J. Ditman, T. S. Deen, John T. Doughty, Chas. W. Dirmitt, C. W. Dare, G. C. Davy, Jos. T. Dougherty, R. B. Dickinson, C. Lewis Diehl, Wm. Drett.

C. P. Eves, Jos. W. Ehman, J. Evans Eckman, Edw. A. Eyer, Chas. W. Eckenroth, J. W. England, Geo. B. Evans, E. G. Eberle, B. H. Eichold, Samuel Evans, Henry Eberhart, H. S. Eckels, T. B. Eisenhart, Evan T. Ellis, D. F. Eft, Horace W. Estlack, M. Bruce Edwards, J. S. D. Eisenhower, Chas. L. Eberle, Wm. Evans, Abner T. Evans, Chas. W. Evans, S. C. Ensminger; Maurice H. Eby, James M. Ebert, Clarence H. Eldon, E. G. Eberhardt, Mrs. Josephine English.

James A. Ferguson, W. O. Frailey, Jr., Frank B. Fleming, C. Falkenhainer, Geo. D. Feidt, Harry Fritsch, Ralph A. Forrest, Carl D. S. Fruh, Gustav A. Fruh, Dunning French, Samuel H. French, Jr., Lawson C. Funk, Benj. F. and Saml. W. Fairchild, C. Stanley French, J. R. Fulton, John P. Failing, H. B. Foresman, J. C. Falk, A. S. French, Clarence R. Fox, Peter P. Fox, B. L. Fuser, Martin E. Farrell, R. W. Fisher, F. D. Ferrell, Richard L. Fishbirne, Nelson Fry, Warren W. Flitcraft, Wm. O. Frailey, Henry Fisher, C. M. Forney, Pliny Fishburne, T. A. Fessler, Lee James Farley, Geo. Castor Faunce, C. F. G. Feterolf, Adolph Fischer, Rolland H. French, Jesse A. Fowler, Susan E. Ferguson, J. M. Fackenthall, Andrew G. Frey, E. H. Fienhold, Oscar C. Fletcher, Robert S. French, Harry B. Fasig, F. W. Fluck.

E. R. Gatchell, P. N. Guise, W. H. H. Githen, J. P. Garvey, Philip Goll, D. C. Gibboney, Ray D. Gilliland, O. H. Gentry, Jr., Charles W. Greenough, L. Goldsmith, George L. Genz, John A. Govry, George A. Gorgas, J. M. Good, Harold D. Guenther, Wilbur B. Goodyear, W. H. Gano, O. E. Gessford, Frank Gleim, Edward Z. Gross, E. B. Goico, Charles T. George, John K. Garland, S. Horace Gotwalt, W. H. Guest, A. C. C. Gamer, H. C. Grim, Norbert H. Grove, J. Clarkson Griffith, Walter J. Garver, Myatt E. Goring,

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G. H. Knowlton, Wallace E. Klopp, Otto F. Koehler, Christopher Koch, E. F. Kessler, H. G. Kambach, D. Geo. Kocher, Edwin H. Kercker, Alex. G. Keller, John Kentworthy, Benj. Krehl, Jacob L. Kolp, J. F. Kiedaisch, Jr., W. M. Kilgus, Thos. J. Kelly, Carl Krebs, Jas. B. Keener, Harry C. Karns, E. L. Klopp.

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Wm. D. Maun, Jno. Moffet, E. S. Mohn, J. E. Mohn, C. F. Moeller, A. G. Miller, C. A. Mueller, Thos. F. McCoy, E. Spencer Moser, J. C. Mayers, W. B. Means, Raymond W. McCarty, Mrs. J. H. Miller, Geo. F. Maddock, R. S. Marshall, Paul L. McConomy, Homer P. Middlekauff, Frederick Wm. Meink, J. W. Mader, C. E. Mengel, John A. McFall, Wm. N. Martinell, Geo. F. Metzger, L. J. Milk, D. A. McMillen, Edwin R. Mohler, C. H. McLaughlin, Wm. McIntyre, Harry Matusow, Frank E. Morgan, Adolph W. Miller, Caswell A. Mayo, Frank X. Moerk, Richard V. Mattison, Robert McNeil, W. Clement Mutty, Clayton E. Morgan, Max Morris, C. H. Meredith, Thos. N. Millikin, Wm. S. Maltman, Chas. M. Morell, Wm. H. Meek, E. O. Moyer, Geo. A. Moleen, Howard O. Markle, L. Cleveland Martin, Clayton R. Myers, Oliver B. McClements, Harry E. Mickey, Lloyd L. Mountain, C. Menkmeller, P. L. Morehead, John A. Martin, Wm. Mittlebach, Chas. N. McClure, John A. McGonigal, Burt E. Moritz, L. A. Meyers, Chas. Maier, Mrs. L. Mandebaum, Chas. B. McLaughlin, Lewis N. Moyer, Geo. F. Maddock, Geo. C. Mackey, Hanford B. McGehee, Robert B. Matter, Charles Mann, J. Harvey Miller, Jos. F. McDonnell, Bertha Mueller, Conrad G. Moell, L. J. Meyers, Thos. D. McElhenie, Clem. B. McCullough, Alfred Mellor, Henry J. Myers, S. Mason McCollin, John C. Montgomery, C. Carroll Meyer, I. L. MacPherran, J. C.

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Harry W. Ohming, Milton M. Osman, Melmoth M. Osborne, O. W. Osterlund, Rudolph H. Ouering, O. M. Oleson, C. Herman Oberholtzer, Walter H. Orrick.

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Benj. Franklin Young, Jos. B. Young, John K. Young, W. S. Young, Florence Yaple, Geo. E. Young, Benj. Lee Young, J. Frank Yeoly, Chas. Young, Frederick R. Yost, Nelson L. Yeakel.

A. T. Zeller, Chas. S. Zimmerman, H. P. Ziegler.

NAMES OF THOSE PRESENT AT THE TESTIMONIAL DINNER.

In addition to the invitations sent to the members of the College and Alumni, a number of special invitations were sent to those prominent in educational work, and to the presidents of various pharmaceutical associations. While quite a number of the latter responded, a number, however, were unable to attend and sent letters containing their felicitations. These include the following:

Mr. Benjamin T. Fairchild; Prof. E. G. Eberle, President, The American Pharmaceutical Association; Mr. H. B. Guilford, President, National Association of Retail Druggists; Prof. C. Lewis Diehl; Mr. F. Gutekunst; Mr. Samuel W. Fairchild; Governor John K. Tener; Hon. Edwin S. Stuart; Prof. J. W. Holland; Prof. John Uri Lloyd; Dr. William Muir; Hon. J. Hampton Moore; Hon. George D. McCreary; Mr. F. W. Meissner; Prof. H. M. Whelpley; Prof.

William A. Noyes; Mr. George A. Newman; Mr. Frank G. Ryan; Mr. H. B. Rosengarten; Prof. Edgar F. Smith, Provost, University of Pennsylvania; Mr. Harry L. Stiles; Prof. H. C. Wood; Dr. Harvey W. Wiley; Dr. Robt. Ellis Thompson, President, Philadelphia Central High School; Prof. William Trelease; Dr. William J. Schieffelin; Mr. Aubrey H. Weightman, Prof. John J. Abel, President Nicholas, Murray Butler, Dr. N. L. Britton, Samuel M. Clement, Jr., Prof. Charles Caspair, Jr., President A. W. Harris, Prof. Francis E. Lloyd, Hon. Hampton L. Carson, Dr. Samuel G. Dixon, Prof. W. G. Farlow, Dr. Joseph S. Neff and Hon. Wm. Potter. A cablegram was received from Henry S. Wellcome and Dr. Frederick B. Power.

The following list gives the names of subscribers and invited guests that were present at the testimonial dinner at the Union League when the President French portrait was presented to the College:

Jacob M. Baer, Edward F. Beale, W. Ward Beam, Jacob S. Beetem, George M. Beringer, Ralph Blum, John J. Bridgeman, Edwin M. Boring, H. H. Breckenridge, Miers Busch, Hon. Theodore Campbell, T. H. Cappeau, Edward James Cattell, William L. Cliffe, E. Fullerton Cook, Charles F. Dare, L. H. Davis, Hon. Murrell Dobbins, Thomas Donaldson, J. W. Ehman, Joseph W. England, George B. Evans, S. K. Felton, James A. Ferguson, Horatio N. Fraser, C. Dunning French, C. Stanley French, Harry B. French, Howard B. French, J. Hansell French, Harry Fritsch, James A. Garvey, George T. Gwilliam, George Haffa, A. M. Hance, John F. Hancock, F. H. Harmening, G. B. Heckel, Dr. Alfred Heineberg, Charles E. Hires, David H. Holcombe, Hibbert P. John, Hon. Isaac Johnson, C. Mahlon Kline, Christopher Koch, Henry Kraemer, Milton Kutz, R. H. Lackey, Chas. H. LaWall, William E. Lee, Charles Leedom, Joseph L. Lemberger, Robert C. Lippincott, Edward T. Longstreth, Clement B. Lowe, Clement W. Lowe, William E. Lucas, Paul L. McConomy, William McIntyre, Rushton Marot, Dr. R. V. Mattison, Harry Matusow, Alfred Mellor, C. Carroll Meyer, Dr. Adolph W. Miller, Frank X. Moerk, Frank E. Morgan, H. K. Mulford, E. E. Nice, O. W. Osterlund, Dr. Ross V. Patterson, J. W. Rabe, J. P. Remington, Hon. John E. Reyburn, Howard Rohrer, Dr. George D. Rosengarten, Walter A. Rumsey, Saml. P. Sadtler, Dr. Nathan C. Schaeffer, Ralph C. Sharadin, Clayton F. Shoemaker, Richard M. Shoemaker, Walter V. Smith, Rev. David M. Steele, Henry C. Stewart, Dr. P. Samuel Stout,

F. P. Stroup, Henry P. Thorn, Benjamin M. Thorpe, Wallace S. Truesdell, S. E. Uhler, Joseph L. Wade, Walter F. Ware, William Waterall, Dr. Charles A. Weidemann, C. T. Wetherill, W. H. Wetherill, Dr. William P. Wilson, Dr. Alfred C. Wood.

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MIERS BUSCH, Ph.B., Chairman.

In connection with this entire movement, to do honor to the President of the Philadelphia College of Pharmacy, many letters were received, which we regret we cannot take the space at this time to publish; but all of these have been placed together and deposited with the other historical material of the College.

The portrait has been placed in a prominent position in the Library of the College, and reflects credit upon the members of the College and Alumni who have so unselfishly and zealously contributed to this testimonial. HENRY KRAEMER, Secretary.

PHARMACEUTICAL MEETINGS.

JANUARY MEETING.—The fourth of the series of pharmaceutical meetings was held on Tuesday, January 18, 1911, with Prof. C. B. Lowe in the chair.

Dr. Horatio C. Wood, Jr., read a paper on "The Keeping Qualitites of Ergot and its Fluidextract," which is published in the April issue of this JOURNAL (see page 172). The paper was discussed by Mr. W. L. Cliffe, Mr. E. M. Boring, Dr. C. A. Weideman, Mr. John K. Thum, and Prof. Kraemer. Mr. Cliffe called attention to the fact that the fixed oil of ergot is used to some extent in the preparation of certain "Hair Oils." Dr. Weideman referred to the value of ergot as a hæmastatic in hemorrhages of the lungs.

FEBRUARY MEETING.—The fifth of the pharmaceutical meetings was held on February 15, 1911, with Mr. Wm. M. McIntyre in the chair.

Mr. Geo. M. Beringer, Jr., presented a paper on "The Extemporaneous Preparation of Medicated Gauzes," which was illustrated with a large number of samples, and also gave a demonstration of the preparation of medicated gauzes. The paper is published in full in the April issue of this JOURNAL (see page 178) and ought to be of very great interest to Pharmacists, as well as physicians and shows what can be done by the retail pharmacist. These formulæ might well be included in the National Formulary, or even be made official, as we find in very many of the foreign pharmacopœias formulæ for the preparation of medicated gauzes. The paper was discussed by Mr. O. W. Osterlund, Mr. E. M. Boring, and the chairman of the meeting.

In the course of the discussion, one of the important points brought out was the superiority of the gauzes made by Mr. Beringer as compared with the general appearance of those found on the market.

NOTES AND NEWS.

BASEBALL IN COLLEGES OF PHARMACY.—When we consider the place that departments of physical instruction hold in our leading educational institutions, it is but natural to suppose that the future historian will consider the peculiar conditions under which this department was introduced into colleges of pharmacy. There have been

a number of brief references in this JOURNAL to the work that the Philadelphia College of Pharmacy has instituted (see this JOURNAL, Vol. 82, p. 545, and Vol. 83, p. 91). While all of the students of the College undergo a physical examination and receive instruction in physical culture, some of them engage in special team work. The baseball team of the P. C. P. played the second of what promises to be, we hope, in the nature of an annual "Harvard-Yale" game with the College of Pharmacy of the City of New York, at South Field, Columbia University, on Friday afternoon, April 14. We publish the following account of the game from the *New York Sun:*

Philadelphia College of Pharmacy baseball team defeated the New York College of Pharmacy team yesterday afternoon for the pharmaceutical championship in a six-inning game, which was played on South Field, Columbia University, in a driving rain, the Philadelphia College of Pharmacy scoring 7 runs, while the New York College of Pharmacy, which is an adjunct of Columbia, could make only 3. The druggists from the Quaker city had the better of it in every department of the game, and although the New Yorkers took the lead in the first inning, they could not hold it long, and Philadelphia won easily.

The home players did their best work in the first inning, when they brought two runs across the plate and shut out the visitors. In the second session they found themselves shut out while Philadelphia made one run, and in the next inning another zero for New York and two tallies for Philadelphia gave the Quaker dispensers the lead. The game was virtually decided in the fourth when a batting rally, two of the hits being three-baggers, added three runs to the Philadelphia score. In their half of the inning the home players made their last run of the game, while the visitors made another in the fifth session. Both teams failed to score in the sixth and as the players were beginning to find it almost impossible to disentangle their feet from the mud, the game was called.

Hart and Gray were the stars of the game, and it was their heavy hitting that won the game for Philadelphia. Each made two three-base hits, and Hart in the fifth hit the ball hard enough for a clean home run, but omitted to touch third in making the circuit and was called out by the umpire. Hancock, who pitched for the winners, had good control of the ball in spite of the wet weather, and allowed only three scattered hits. New York used two pitchers, Steiert and Billings. All of Philadelphia's runs were made while Steiert was in the box.

Yesterday's game was the second annual contest, the game last year, which was played in Philadelphia, also resulting in a victory for the Quakers.

The score by innings:

							R.	H.	E.
Philadelphia	0	1	2	3	1	0	7	7	2
New York	2	0	0	1	0	0	3	3	4

Batteries—Hancock and Hart; Steiert, Billings and Neundorfer.